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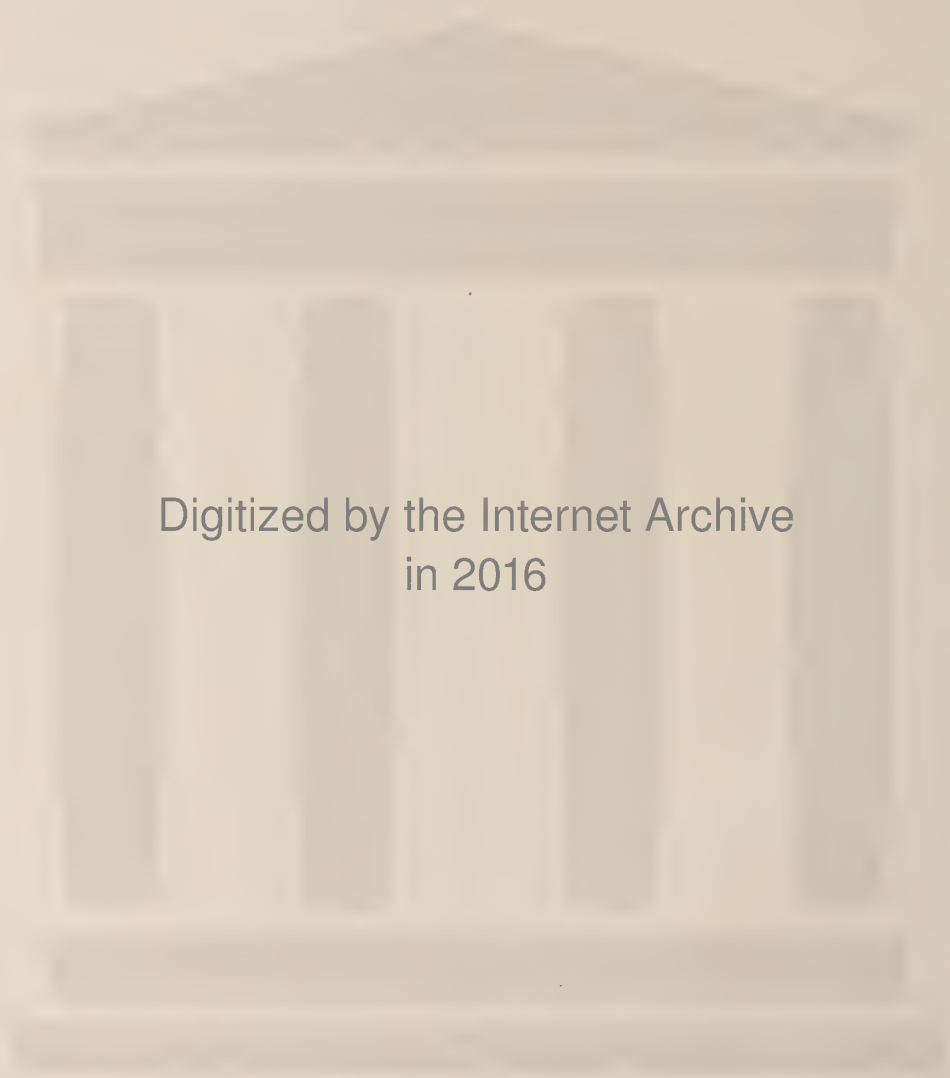
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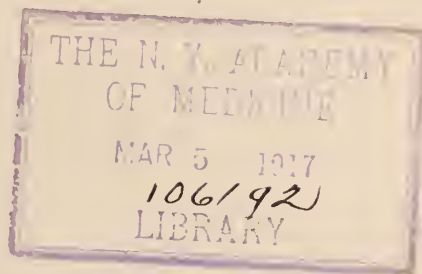
Colorado Medicine

The Journal of the Colorado State
Medical Society

WILLIAM H. CRISP, Editor



Volume XIII. January to December
1916



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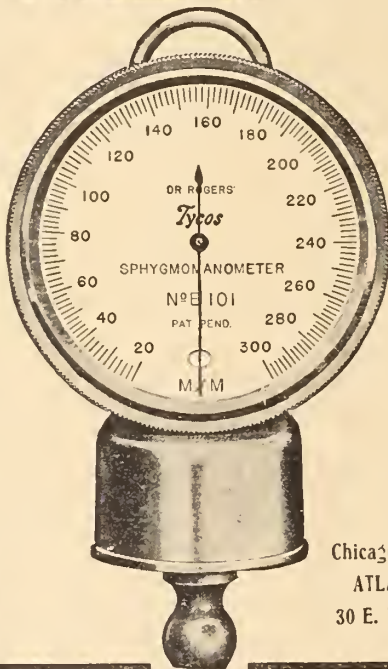
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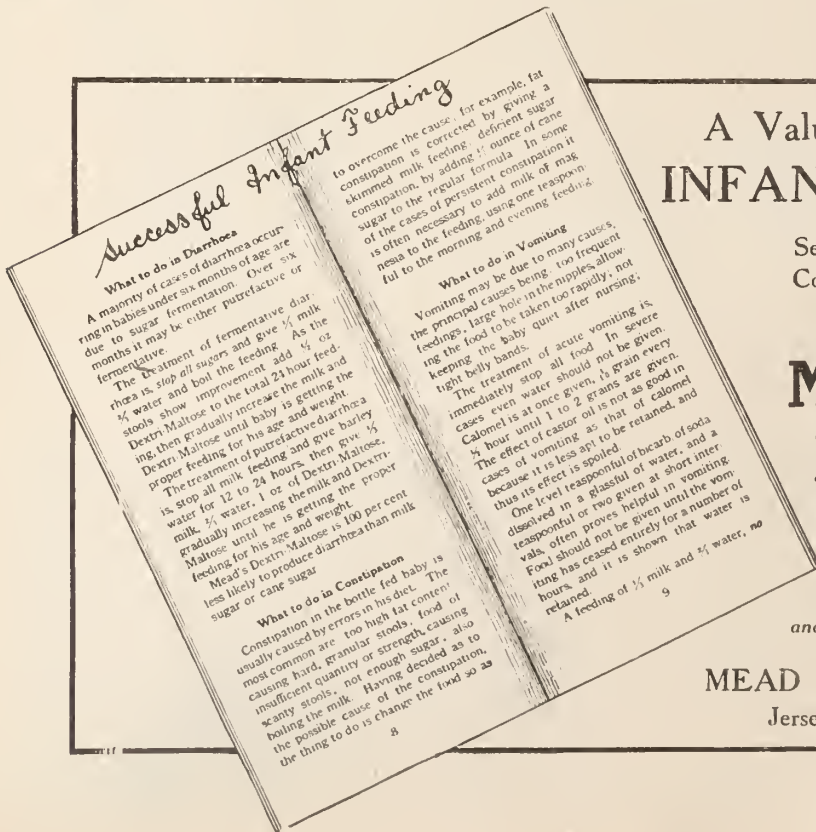
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Editorial Comment

THE MEDICAL RESERVE CORPS OF THE UNITED STATES ARMY.

This Corps was authorized by Congress something over five years ago. Under the provisions of the act the President was empowered to appoint a number of reputable physicians and surgeons from civil life, these to form a distinct Corps, the members of which were to have the rank of First Lieutenant, mounted. The purposes of the Corps were to augment and strengthen the Medical Department of the Army.

Up to this time something over 1,300 medical men have been appointed in this way. Each man receives a commission signed by the President; he takes the oath of office before an officer of the Army, agreeing to serve when and where he may be ordered by the War Department. He thus becomes a part of the regular establishment of the Army.

The Corps is made up of an active list and an inactive list, the members of the former being on active duty, while the inactive men are subject to call at any time. In the event of an emergency these latter officers would be assigned to active duty immediately, each man being given such work as it might be thought that he could best perform. It is worthy of note that in so far as is known to the writer, this is the only department of the Army in which such an auxiliary corps obtains.

Young men of the best repute, exceptionally qualified professionally, are constantly being appointed to the Corps. An applicant writes to the Adjutant General of the Army

asking permission to apply to the Surgeon General. He encloses two letters of commendation written by well-known citizens. Should his application be favorably considered he is sent a blank which he fills out and forwards to the Surgeon General in Washington. Should this be favorably received he is instructed to appear before officers of the Medical Corps of the Army for physical and professional examination. Should the result of this be deemed satisfactory his name is sent to the United States Senate by the President, and he is duly commissioned.

In order to begin the instruction of the members of this Corps in duties other than those which they perform in civil life, the Department has instituted a correspondence course for officers of the Medical Reserve Corps. This course is conducted by the Army Service Schools at Fort Leavenworth, Kansas. Each officer is furnished regulation books by the War Department: Army Regulations, Field Service Regulations, Manual of the Medical Department, Drill Regulations and Service Manual for Sanitary Troops, and similar books for reference and study. A list of questions is sent out from the Army Service Schools at regular intervals. The given officer is instructed to study the text to which reference is made, to write out his answers without immediate reference to the text, and to forward them to the Director at Fort Leavenworth. The course of instruction extends from October until April; an examination is held at its end. The contemplated course embraces four years of study.

It will thus be seen that an attempt is being made by the members of this Corps to

prepare themselves for active work should the country need their services.

Local organizations have been formed in a number of states for the instruction of members and for the free discussion of topics pertaining to the work. Such an one has been organized in this state, with the title of "The Association of the Medical Reserve Corps, United States Army, Colorado State Division." This Association holds regular monthly meetings. At the last one, held at the University Club, Denver, January 10th, Major General Frank D. Baldwin, U. S. Army (retired), spoke on the importance of the work of the Corps; Lieut. Col. Paul F. Straub, Medical Corps, U. S. Army, discussed the general formation and instruction of the Reserve Corps, and First Lieut. William A. Jolley of Boulder, M. R. C., U. S. Army, related at length his recent experiences in Serbia, deducing therefrom important lessons in regard to national preparedness.

Surgeon General Gorgas takes very great interest in the Medical Reserve Corps; in case of necessity he would command the services of its members to the utmost of their capacity and ability. The members feel it their duty and privilege to endeavor to fit themselves for such work as might be assigned to them.

C. A. P.

FEDERAL CONTROL OF TUBERCULOSIS.

The need for federal control in matters of public health is not limited to tuberculosis. But the chronicity and curability of this disease, the very large numbers of persons affected by it, the importance of sanatoria in its treatment, and the tendency of many of those affected to migrate from one place to another in search of health, place tuberculosis in a class by itself.

The economic importance of tuberculosis and of its adequate control has almost become a byword. But we have still a long way to go in the management of "The Great White Plague", and some possibly familiar figures will bear frequent repetition. During 1913 over 143,000 persons died of tuberculosis in the United States alone. A well-known estimate declares that there are ten

eases of the disease for every death, so that the total number of persons afflicted in this country may be placed at 1,430,000. A conservative estimate states that 1 per cent. of the population are tuberculous; in other words, that the number of consumptives is about 987,000. An allowance of only \$1,500 for the loss involved to the community in connection with each person who dies from the disease, including cost of medical attention, food, nursing, and lack of work during the average period of three years' duration of the case, furnishes an annual cost of \$214,500,000 to the people of the United States.

The 550 sanatoria, hospitals and day camps already devoted to tuberculosis patients in the United States, together with 400 dispensaries having over 1,000 physicians in regular attendance, and a corps of about 4,000 visiting nurses engaged exclusively in this work, still only touch the fringe of the problem. Assuming that out of the 143,000 deaths, 25 per cent. are in families which can afford to properly care for the patient in their own home, 117,250 patients are left to be cared for in hospitals. The average stay of an advanced case is stated at about 110 days, so that each bed can be used for three patients a year. Thus Kober* concludes that about 35,000 beds for advanced cases alone are needed. That, however, it appears is the total present capacity of the United States for all classes of patients. It has long been recognized that the greatest danger to the healthy comes from advanced and helpless cases of tuberculosis. It has been stated that the segregation of these advanced and expectorating cases in hospitals far outweighs in preventive value all other measures. The duty of providing special hospitals or special pavilions for this purpose can only be properly discharged by the community at large.

Although the existence of 2,500 special agencies, including about 1,200 state and local antituberculosis associations, for carrying on the warfare against tuberculosis suggests the great interest which has been

*Reprint No. 309 from the Public Health Reports. The figures here quoted are contained in Kober's essay.

aroused in this matter, the very multiplicity of these organizations carries with it a hint of the chaos and lack of single purpose which must prevail in the campaign. What we need is a centralized war council such as has enabled Germany and Austria to present so vigorous and effective a resistance to the powers allied against them. The only body which can satisfactorily organize the work, or which can develop the necessary financial resources, is the United States Government. The work of a federal health department might well be supplemented by the co-ordinated activities of states and cities. Seventy-five per cent of those discharged from sanatoria and other institutions as apparently cured return to bad social and industrial conditions, suffer relapses, and finally die of the disease. This outcome should be capable of prevention by the establishment of working colonies or a careful supervision of the conditions of work among those who have been under treatment for tuberculosis; but it is hopeless to look for any far-reaching success in this direction from any smaller unit than the nation as a whole. A system of annual medical examinations is essential for the recognition of incipient cases, and this again could be accomplished much more readily and efficiently under some scheme of federal supervision than in any other way.

THE STATE BOARD OF HEALTH.

Writing by request in the New Year edition of the *Pueblo Chieftain*, Dr. S. R. McKelvey, secretary of the Colorado State Board of Health, presents a brief statement of the present status and activities of the board. According to his diagnosis, the board needs less the authority of new laws than the financial wherewithal to enforce those already existing. Thus the statute declares that "the State Board of Health shall have general supervision of the interests of health and life of the citizens of this state." Dr. McKelvey credits the great majority of legislators with honorable intentions. He remarks, however, that while "they can generally see how an appropriation may save the lives of herds of swine and other live stock, they need a microscope to see how a

reasonable appropriation might save many human lives".

Just as parliaments in England and in other countries have from time to time limited the activities and ambitions of their rulers by withholding financial supplies, so governors and legislatures of this and other states frequently stultify the effectiveness of laws previously passed by refusing badly needed appropriations.

During the past winter several public speakers in Colorado have declared that this state was far behind in the matter of registration of vital statistics, and Miss Julia Lathrop went so far as to announce that Colorado was not included within the registration area of the United States. Dr. McKelvey points out that this is an error, that Colorado has been within the statistical or registration area of the United States for several years, and that we have practically the same law governing registration of vital statistics as is now in force in about three-fourths of the United States.

A NEW LIBRARY BUILDING FOR DENVER.

It is gratifying to be able to announce that the trustees of the Medical Society of the City and County of Denver have made arrangements by which the Society will soon have new and commodious quarters.

The Metropolitan Realty Company are about to erect a two story building on Court Place, on the lots next adjoining the Metropolitan Building, and have agreed to give the Society the use of the whole of the ground floor. This will afford ample space for the library, providing for its future expansion, and a meeting hall with a seating capacity of two hundred and forty. The library rooms with the office of the Society will occupy the front part of the building, and the meeting hall, amply lighted and ventilated by skylights, will be in the rear. The building will be of Harvard brick and be designated the "Medical Library". The approach will be by an archway from the lobby of the Metropolitan Building for the use of its tenants, in addition to an entrance hallway from Court Place. The front elevation of the proposed



New Drawing of Proposed Medical Library in Denver.

building is shown by the cut on this page. It is expected that the building will be ready about May 1st, 1916.

Original Articles

HEART DISEASE AND PULMONARY TUBERCULOSIS AS CONTRAINDICATIONS TO SURGERY.*

H. G. WETHERILL, M.D., F.A.C.S., DENVER.

Every experienced surgeon will recollect that he has been repeatedly told when an operation has been suggested, "But, doctor, I can not have an operation or take an anesthetic, I have a weak heart." In the great majority of such instances there is found to be no foundation of fact for such a statement, or it is based upon some previous ex-

perience in which an anesthetic has been badly administered by some timid or inexperienced person.

There are presented for consideration, however, a certain definite number of patients who require surgery, and yet have well defined, or even severe and pronounced organic heart lesions, often with marked failure of compensation. In such cases it is sometimes extremely difficult to determine whether the administration of an anesthetic and the performance of the necessary operation may be safely undertaken. These borderline cases call for the exercise of the nicest medical and surgical judgment in determining whether the benefit to be derived from the operation justifies the assumption of the extra hazard which the heart complication is assumed to create, and whether, if an operation is performed, it shall be done under one anesthetic or another.

It has been my fortune for many years, particularly since residing in Colorado, to

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6, and 7, 1915

have to operate upon many persons who would, for various reasons, be regarded as sub-standard surgical risks, and this experience has served to crystallize my opinions regarding such cases. I have therefore ventured to set forth in this paper these observations, based upon facts, for your consideration and discussion.

It has been a constant source of astonishment to me that, in Colorado at least, so many desperately ill tuberculosis patients may take gas or ether and submit to severe surgical operations without a detrimental effect. Whether this is due to the favorable influence of the climatic conditions of this state upon certain tuberculous processes or whether it may be due to the extraordinary precautions one naturally takes with sub-standard risks can not be determined with certainty, but it is fair to assume that both of these factors enter into the problem.

Organic heart disease has long been popularly regarded as a contraindication to surgery and anesthesia, and in Colorado, with an altitude of from one mile at Denver to about two miles at Leadville, it has been believed by the laity and taught by many members of the medical profession that such disease of the heart is a peculiarly dangerous complication for any condition demanding surgery or an anesthetic.

My experience in Colorado has convinced me most positively that these notions are erroneous as to operations and anesthetics in this state if exceptional attention is given to the details of preparation, operation and aftercare, and if good judgment is exercised in the selection and administration of the anesthetic. Furthermore, my judgment upon this subject is I find confirmed and corroborated by the opinions of those physicians and surgeons who have had the widest experience with such sub-standard surgical risks. For example, Dr. J. N. Hall, who has followed many such border line cases through serious surgical operations, has said to me upon more than one occasion that he never had known one patient to do badly on account of the previously known and recognized heart lesion, and Dr. Bonney, Dr. Arneill and Dr. Holden hold much the same

views with reference to pulmonary tuberculosis under proper operative precautions.

Upon the other hand I have observed many times the most astonishing improvement in the lung and heart lesions of such patients, and in their general well-being, when, for example, the operation may have been done for the elimination of a local focus of infection from which the pulmonary or cardiac complications may have been maintained and perpetuated or may have had their origin, as will be noticed in some of the brief case reports quoted.

Surgical success in such complicated cases depends upon many details of management before, during and after operation which individually seem trivial and unimportant, but in the aggregate make for success and recovery, while their neglect predisposes to failure and a fatality.

First and most important of all, the surgeon should have in such an emergency the advice and counsel of a capable and expert internist to advise such preparatory régime and medicinal treatment as the patient requires. If time permits, absolute rest in bed previous to operation with such treatment as may bring about the highest attainable measure of cardiac compensation and pulmonary rest is indispensable. At this stage, as well as during the period of convalescence, the patient should be under the closest scrutiny of the internist, who should have a free hand and the largest liberty in directing any treatment that he may regard as essential to the welfare of the patient.

The anesthetist and the anesthetic must both be chosen with extreme care. Wherever permissible a preliminary dose of morphine and atropine or scopolamine should be given a half hour before operation, and in certain fields and regions at least the principles of Crile's anoxi-association should be employed through the judicious use of local anesthetics.

One frequently hears a friend of a patient or a visiting doctor remark during an operation, "He takes the anesthetic well, does he not"? The answer is, "the anesthetic is being well given".

Too much importance can not be attached to the administration of the anesthetic. The

whole course of the case, both immediate and remote, may depend upon the skill with which an anesthetic is given to a sub-standard surgical patient. Indeed, upon the preparation and aftercare, the anesthetist, the hemostasis, the time consumed in operating, and the protection of the patient from exposure and cold depend the results. These details are in such cases far more important than the actual operative work itself. They are always important, but for patients with heart lesions and pulmonary tuberculosis are absolutely essential in order to attain even a fair measure of success.

Without a single exception I have observed that patients with mitral lesions stand narcosis and operation well, while those with aortic and myocardial lesions are poorer risks, but may be operated upon with safety if the above precautions are strictly observed. Patients with advanced pulmonary tuberculosis and greatly impaired respiratory capacity may take ether, nitrous oxide gas and oxygen, and somnoform without difficulty or subsequent harm if the anesthetic is well administered and the operation is not unduly prolonged. A moderate dose of morphine and atropine beforehand is in such patients enormously helpful. It shortens the first stage, reduces shock, cuts down the amount of anesthetic necessary and promotes post-operative comfort and recovery.

Ether is like champagne. The more one takes the more he must eliminate, the longer he is about it, and the sicker he feels. A little stimulates one and does no apparent harm; much makes one miserable for hours or days. Chloroform I never permit to be used upon any patient and I regard it as being particularly deadly to those with heart disease and pulmonary tuberculosis. Its latent secondary toxic effects completely disqualify it for anesthetic use in my opinion in any case, but for such sub-standard risks as are here considered, I feel that it is especially dangerous, notwithstanding the fact that it was long regarded as the anesthetic of choice for pulmonary cases, and is still preferred by some surgeons.

To summarize, let me say that my experience with pulmonary and cardiac sub-standard risks has been uniformly favorable

when operations have been necessary; that extraordinary precautions must be employed to safeguard such patients from danger, and that the time of the operation should be as brief as possible, but that I should never refuse such an invalid a necessary surgical operation because he happened to have a heart lesion or even advanced pulmonary tuberculosis. I believe that such operations upon such patients may be done with greater safety in our high and dry climate than in the humid and torrid regions. Certainly their recovery is more prompt and complete under our atmospheric conditions than at sea level. At least that is my opinion after a considerable experience under both conditions. There is of course a great difference between opinions and facts, but in this instance my opinions are based upon close observation and facts. Such border line cases are far from hopeless, and are entitled to the individual opportunity for recovery that is afforded them through careful and courageous operations done under strictly favorable conditions.

Case 1. A patient of Dr. Wm. Rothwell. Home in Iowa. Uncompensated mitral insufficiency. Unable to lie down or breathe comfortably in any position. Dropsical. Had acute cholecystitis with stones and great pain. Operated upon in a sitting position at St. Luke's Hospital, Denver, with a preliminary dose of morphine and atropine. Local anesthesia and a short ether narcosis after the gall bladder was exposed. Many large stones removed and gall bladder drained. Relieved immediately. Recovery without incident. Heart symptoms much improved and general health much better subsequently.

Case 2. Patient of Dr. Hall. This lady has had an uncompensated mitral lesion for many years, with edema of the feet and ankles, and great difficulty in breathing in the recumbent position. Her skin is dusky and her lips and nails are blue from imperfect oxygenation of the blood. She had a large mass of fibroid tumors in the uterus and a cystic right ovary. She was operated upon Nov. 11, 1914, under ether anesthesia. The uterus was removed by supra-vaginal amputation. The cystic right ovary was also

removed. A pelvic drain was placed through the vaginal vault, and was removed under somnoform anesthesia seven days later. Her recovery was complete and uneventful, and her circulation and general health were greatly improved.

Case. 3. Patient of Dr. Arneill. Operated upon at Mercy Hospital, June 21, 1914. This lady had an old uncompensated mitral lesion with myocarditis. She was distinctly cyanotic and her respirations were rapid and difficult. She was operated upon for a double pyosalpinx under ether anesthesia. The tubes, right ovary and appendix were removed and a drain was placed through the vaginal vault. She sat in the Fowler position during her convalescence and made a smooth recovery. Her general health and cardiac condition have been enormously improved since the operation.

Case 4. This young man was a patient of Dr. Bonney. He has had an old endocardial infection, presumably of tonsillar origin for ten years, and though he had had many sub-acute attacks of appendicitis, operation had been refused because it was believed that it would be dangerous to give him an anesthetic. In July, 1914, he had an acute fulminating appendicitis which demanded immediate operation. This was done at St. Luke's on July 27th. After careful preparation and under the supervision of Dr. Bonney, ether was given. The anesthetic was carefully administered by an expert and the patient presented no unpleasant symptoms as a result of the anesthetic either during or after the operation. A perforated, gangrenous appendix was removed. The patient's general health was vastly improved subsequently and his heart symptoms were definitely better.

Ether was given to all of the above patients, either in conjunction with local anesthesia or with morphine and atropine. My tuberculosis cases operated upon with ether are very numerous and have been without incident of any kind to make me regret that ether was given or the operation performed.

936 Metropolitan Building.

DISCUSSION.

C. G. Parsons, Denver: One, like myself, who is continually giving anesthetics, is often in a position to see some remarkably bad surgical

risks brought to the operating table, and with careful surgery from all angles the great percentage of these cases are successfully operated on.

One learns to place patients in two classes, namely, good risks and bad risks. Now, discriminating between these risks, and using surgical measures adapted to the particular case, will result in success in most instances. These measures include previous preparation of the patient, medication preliminary to anesthesia, and the anesthetic, (general, local, spinal, anoci-association, etc.) as indicated. The operative procedure should move along deliberately and evenly, for in much the same way as intermittent anesthesia tends to produce shock and inhibitory phenomena, so also do intermittent surgical manipulations produce this same condition.

I think that practically any case of heart disease or pulmonary tuberculosis can be successfully operated on, provided the surgical procedure is of the best.

Charles A. Powers, Denver: It has been my fortune to operate on a very considerable number of patients in fairly advanced tuberculosis, and I have never yet, so far as I can remember, had cause for regret. A single instance may illustrate:

About four weeks ago Dr. Bonney asked me to see a man with advanced right-sided pulmonary tuberculosis. This man had had repeated and profuse pulmonary hemorrhages for three days and nights prior to the time at which I saw him. When seen he gave all of the evidences of a beginning of appendicitis. At the end of some twenty-four hours after the onset the symptoms of appendicitis were classical. The man was seen at about 12 o'clock on a given day; he had suffered severe pulmonary hemorrhages the night before. He was submitted to an immediate operation and made a complete recovery. While few of us would recommend laparotomy for the relief of pulmonary hemorrhage, yet in this case the hemorrhage ceased with the operation itself.

I was interested in hearing Dr. Wetherill say that ether is like champagne. I have tried both and must cast my vote for the champagne.

Seriously, I think the anesthetic is of supreme importance. At this day the man who does not avail himself of the services of a skilled anesthetist, where such services are available, submits his patient to an undue risk. The anesthetic is of prime importance. I should like to endorse emphatically the contention of Dr. Wetherill that acute cases, such as appendicitis, which also have pulmonary tuberculosis, should be judged much as are other cases.

O. M. Shere, Denver: I should like to bring out one or two points relative to this discussion which were not touched upon by Dr. Wetherill in his paper, and that is with reference to cases operated on with pulmonary tuberculosis in the advanced stages.

Some of you will no doubt recall Dr. Mayhew's paper upon the same subject read at one of the state meetings a few years ago. His conclusions arrived at during that discourse were identically the same as the views expressed by most of the speakers this morning.

Having been identified for the past decade with a tuberculosis institution in Denver, where I have performed over one hundred operations during that time, I have observed that notwithstanding the fact that these patients make as good operative recoveries as other patients in normal health, yet the after-effects of the anesthetic are not to be ignored in undertaking an operation upon such patients. We have noted that these patients

will decline in health after a prolonged ether anesthesia. Their pulmonary condition gradually gets worse and shows effects which we are inclined to attribute to no other cause than the ether administered during the operation.

In the last series of ten or twelve cases we have resorted to stovain intraspinal anesthesia and we find that it works much better than ether anesthesia.

Another point gained by our study of this subject is that whenever possible the intratracheal method should be substituted for the old method of ether administration.

From a thorough study of our cases for months and months following the operation we deduce the rule that the anesthetic is a matter of very serious consideration in cases where pulmonary tuberculosis exists in an advanced stage. In addition, I would urge the greater use of stovain as well as the intratracheal method of giving ether in these cases.

Leonard Freeman, Denver: I wish to endorse what others have said in commendation of Dr. Wetherill's paper. The subject is of such extreme importance that it should be emphasized by a number of men who have had some experience in operating upon cases here in Colorado. I think the greater part of the laity imagine that pulmonary tuberculosis contra-indicates operation, no matter what the stage of the tuberculosis may be. Most patients ask whether there is any danger from operation on account of the heart. The heart is not the thing we are particularly concerned about, and I am extremely glad Dr. Wetherill has emphasized that point so strongly. The lungs are of more importance, and yet I think we can go too far as regards pulmonary tuberculosis. We must make a division of these pulmonary cases. We must say that some of them can be operated upon with safety, and that some of them can be operated on only with danger. In cases which are latent and have been latent for some time the danger is small. In cases which are more or less active the danger is considerable, and in general is proportionate to the amount of activity. I have more than once seen acute pulmonary exacerbations result from operations upon cases in which the disease was active, and I have seen several deaths from this cause, so that I think we should be cautious and try to separate those cases that are applicable for operation from those which are not, and the best division I can make is into the quiescent and active cases.

I thoroughly agree with Dr. Shere, that in tuberculosis cases we should incline toward other forms of anesthesia—perhaps local anesthesia, and possibly spinal anesthesia.

O. S. Fowler, Denver: In my opinion there is no defense for a general anesthetic in cases of pulmonary tuberculosis. The fact that there are a dozen different methods of administering anesthetics, condemns every one of them on the face of it. It means that none are standardized. The fact is that you have ether, chloroform, somniform, nitrous oxid, and so on, and four or five different methods of administering each one. The fact that some men use one inhaler for ten or fifteen years, then discard it, try some other inhaler, and then go back to the old one, shows they have no standard method of administering ether. Dr. Shere mentioned the after effects of anesthesia in operating on tuberculous patients. That applies to the chronic cases. The acute cases are the ones that give early trouble following the anesthetic, while the chronic cases give late manifestations. It is true that while a number of these tuberculous patients go through an opera-

tion and live, a large percentage of them die. It is very essential for us, if we can, to lessen the death rate from operations on tuberculous patients. Today, with the successful development of spinal anesthesia in the hands of some men, although it has not been successful in my hands, we can use it; or we can employ local anesthesia, which I prefer. Today, when local anesthesia is recognized the world over as having extremely slight risk as compared with other methods, it is astonishing to hear men compliment themselves on the low mortality from general anesthesia. I for one maintain that there is no defense for general anesthesia in cases of pulmonary tuberculosis.

Tuberculous patients oftentimes make a good recovery from the operation, but the after effects are bad. In the hands of many men spinal anesthesia has given uniformly excellent results. In the hands of most men local anesthesia will give the same results. The only reason I can see why local anesthesia is not adopted in every case of so-called bad risk is the fact that the operator is not familiar with the technique. In this connection I wish to say this: If you cannot give a local anesthetic yourself, then secure the services of a man like Dr. Parsons who can give it for you, or get an interne to give it for you. The method is simple, and there is no reason why local anesthesia should not be used in every case of pulmonary tuberculosis. So much stress laid upon the selection of the anesthetist means that there is danger in the anesthetic.

I. B. Perkins, Denver: Dr. Wetherill's paper is most timely, because we see out here a great many cases of tuberculosis, many of whom we are forced to operate upon and in very acute conditions, and I fear some of those who have discussed the paper this morning fail to recognize the position in which we are placed. In other words, shall we let a patient die without trying to give him an anesthetic, or give him an anesthetic and try to save him? That is the point that confronts us often, and I feel that in our experience, although I cannot give statistics, we have saved a great many lives of tuberculous patients by operating on them, and usually they have been operated upon in acute conditions, some of them, however, not, and our results have been good.

With regard to the anesthetic, I feel that my experience has been in favor of chloroform rather than ether. The anesthetists and medical men upon whom I largely rely tell me that the value of chloroform lies in lessening blood pressure instead of increasing it by the ether, and also that with the chloroform there is not so much bronchial secretion, which is a factor of great importance.

As regards local anesthesia, we do a great many of these operations under local anesthesia. One of the worst cases of appendicitis I ever had was one in which the appendix was gangrenous and situated far back under the liver. In this case I operated under local anesthesia, the patient being a tuberculous subject. The patient was in a bad physical condition. He died, just as any other patient would die who did not have tuberculosis, on account of the gangrenous condition of the appendix. I want to say this: that I have seen more shock from local anesthesia than I have from chloroform even in these cases.

Charles A. Powers, Denver: May I add a single word to the brief remarks I have already made? When I say that these cases of pulmonary tuberculosis should be judged as other cases, I beg of you to realize that I refer to the acute cases,

of which an acute appendicitis is an example. As to anesthesia, we want to throw in, in our estimate of it, a great big barrel full of sound common sense. Under local anesthesia I have been able successfully to drain the gall bladder and do similar operations, but whenever it may become necessary for any one of you to drain my gall bladder, I beg that I may be given ether.

G. W. Holden, Denver: It has been my privilege during the last eleven years to see considerable surgical work done in tuberculous cases, and the results have been uniformly good.

I decidedly favor the use of ether for all cases of pulmonary tuberculosis, if it is properly administered and an ether "jag" avoided.

These ether "jags" occur altogether too frequently for the safety of the patient, and for the tuberculous they spell disaster.

The tuberculosis case should be brought to the operating room, the site of operation made ready, and the anesthetic not administered until the surgeon and his assistants are in readiness to begin the operation.

I think that the fact that so many of our operative cases have had unfortunate after-results has been largely due to forcing the anesthetic and allowing the patient to wait under its influence until the surgeon was prepared to operate. The shorter the period of anesthesia and the operation, the less is the liability to shock, and the better are the results.

Frost C. Buchtel, Denver: I believe anoci-association anesthesia in tuberculous patients should not be used at all for the reason that it consumes a certain amount of time, and the very important thing as emphasized in Dr. Wetherill's paper, is quick operation. Dr. Holden brought out a very important point also, namely, that the surgeon should be ready to begin the operation as soon as the patient comes under the influence of the anesthetic.

John Inglis, Denver: I should like to give briefly a report of my experience in the last few months as to tuberculous patients of mine undergoing surgical operations. A tuberculous patient of mine was operated on for kidney stone by a competent surgeon. She was operated under ether anesthesia. She left the hospital apparently in good condition but never fully regained her strength, and in another ten months she died. The tuberculous condition was quiescent at the time of operation but lighted up soon after it.

Another case came into my hands that had had tuberculosis thirty years ago. The patient was a woman, over fifty years of age, in apparently perfect health, with spasmodic gall-stone attacks. She had considerable involvement of the right lung, with marked dullness, but the tuberculous condition was latent, and she had undoubtedly spent the last twenty-five years of her life in almost perfect health. I referred her to a surgeon who advised her to be operated on for the gall-stones. She went to Pittsburgh, where a prominent surgeon operated on her. She left the hospital in two weeks in fine shape, and in just exactly six weeks she died with pulmonary hemorrhage, something she had not had for thirty years.

Another tuberculous case of mine, rather active, had been out here eighteen months, and developed sinus infection. This case went to a prominent nose and throat man whose ability is unquestioned. The patient died of a pulmonary hemorrhage immediately following the operation.

Another patient with tuberculosis of the lungs had been here two years, had steadily improved until she had lost cough, had regained her

weight, and was in very good health with the exception that she developed gall-stone attacks. I called in consultation, and operation was advised. The woman was operated on under chloroform anesthesia in February of this year. She withstood the operation without trouble, but has lost twenty pounds since. She has already developed hectic fever, and, so far as I can see, her case is practically hopeless. She has developed a tuberculous throat since the operation.

I simply cite these cases as comprising a part of my practical experience in the last few months as to tuberculous cases undergoing anesthesia. Tuberculosis adds another risk to any general anesthetic, and this every competent observer knows from his own experience.

Operations on the tuberculous, where possible, should be done under local anesthesia, and where this is not possible the operation should be one of necessity and not one of choice. Where it is one of life-saving necessity there is no question about it, but any surgeon should hesitate to subject a tuberculous patient to an anesthetic or to an operation that lowers the vital resistance and too often lightens up a latent focus of infection, unless the need for that operation is imperative. I doubt whether the practical experience of any of the men of this Society would differ much from my own.

Will Howard Swan, Colorado Springs: I think this is one of the most important subjects that can be brought before this Society. As physicians in the state of Colorado we see many cases of tuberculosis, and where there are so many cases of this disease there are constantly surgical emergencies or surgical conditions that have an immense influence on the patient's resistance and progress and fight against the tuberculosis itself. While I do not believe we should for a minute allow ourselves to think that there is no more danger in giving an anesthetic to a patient with quiescent tuberculosis than to a patient who is not tuberculous, I think most of us have distinctly the impression that we have seen much less trouble from anesthetics than we should expect; and not only that, but the most important thing is that when the condition for which the operation has been done is successfully relieved, the patient is likewise relieved of a burden, and is able to fight successfully the tuberculosis whereas he was not able to do this before the operation.

I should like to speak of one thing personally which bears out what has been said as to the choice of ether or chloroform as the anesthetic in patients with tuberculosis. A few years ago a young man living in the south had active tuberculosis; he also had several attacks of appendicitis. Finally, he had one in which it was decided that operation should be done. In his case ether was chosen as the anesthetic, simply because he had a very bad heart. Unfortunately he had pneumonia after four or five days, from which, however, he recovered. His father in the south made objections primarily to the bill, but he also made objection to his son having been given ether instead of chloroform. All surgeons in that part of the country were alleged to have said it was a gross injustice to give the patient ether instead of chloroform when it was known he had tuberculosis. I took occasion at that time to inquire of men in this state who were giving anesthetics a great deal, and men who were dealing with tuberculosis, as to the choice of anesthetics in such cases, and I did not find one who suggested chloroform. Many would give chloroform only in extreme conditions, while others would give ether preferably always. They

had rarely seen any evidence that ether had been irritating or had done any harm to a patient with pulmonary tuberculosis.

Ella Mead, Greeley: This is a subject in which I am very much interested. I have given a great many anesthetics to tuberculous patients, and the anesthetist is not to blame because a tuberculous patient develops a surgical condition. As anesthetists we are standing between the devil and the deep sea, and we strive to give that anesthetic which is safest and best for the individual patient. I am an advocate of ether in all these cases. The objections to chloroform are based on the fact that the opsonic index of the patient is lowered more with ether, on account of which there is less resistance to infection afterwards; and also on the greater amount of shock to which the patient is subjected while under chloroform anesthesia as compared with ether anesthesia. Local anesthesia, as has been mentioned here, might be a help. If we could hypnotize our patients it would be a good thing, and the anesthetist should be more or less of a hypnotist. I believe local anesthesia can be used with fair success in operating on these tuberculous patients; but we must remember that a tuberculous patient is under more than the usual mental strain, and it is a question whether you should give him a local anesthetic or not, because the shock will be about as great as when you administer chloroform.

The minimum amount of ether should be administered. I have found these patients require proportionately more air and less ether than others. I sometimes run a little oxygen under the inhaler too.

The great thing to be avoided is the bronchorrhoea. Most anesthetists accustomed to giving ether can maintain a dry chest, but in difficult cases atropine helps.

In open cases I never allow the Trendelenberg position. On the contrary, I slightly elevate the head and chest, to avoid mucus coming up and being respiration into a healthy area. This is the cause of much of the subsequent trouble.

H. G. Wetherill, Denver (closing): I feel pleased that my paper has brought out a spirited discussion. That it should develop differences of opinion is not at all astonishing. It is noteworthy, however, that the surgeons and medical men of largest experience are practically unanimous as to what may be done with safety for patients with cardiac and pulmonary lesions under a carefully administered ether anesthesia.

Some of those who have discussed the paper seem to have missed its message absolutely, notwithstanding the fact that I tried hard to emphasize two points.

Success in operations upon sub-standard risks depends primarily upon the time consumed in performing the operation, and second, upon the skill with which the anesthetic is given.

No surgical procedure is fool-proof.

Spinal anesthesia is an excellent form of anesthesia for certain cases, but we must concede that it has its dangers and limitations. There are many surgical cases which cannot be dealt with by either spinal or local anesthesia.

It is an important sign of the times, Mr. President, that in this discussion chloroform should have no enthusiastic champion. Chloroform has many disadvantages. Its immediate risk is great, but its secondary and latent risks are greater, as was pointed out by Harold Stiles of Edinburgh years ago. Any one who gives chloroform at the present time must be prepared to defend himself in the courts if, by chance, an accident occurs; and he must be prepared to defend himself almost

alone, for the sentiment of the medical profession, at the present time, is that chloroform is not a safe anesthetic.

FURTHER EXPERIENCE WITH THE USE OF THE WIRE TOURNIQUET IN PARTIAL THYROIDECTOMY.*

LEONARD FREEMAN, B.S., M.D., F.A.C.S.

Several years ago I reported, before the Texas State Medical Society, a "New, Simple and Safe Method for the Performance of Partial Thyroidectomy" by means of a wire tourniquet. Since then I have had occasion to employ the procedure fifty-six times in forty-two cases and have modified and perfected the technique considerably, so that I now feel justified in claiming that the method is a useful addition to the operative procedures in connection with goiter.

A satisfactory goiter-operation should fulfill the following conditions: It should be

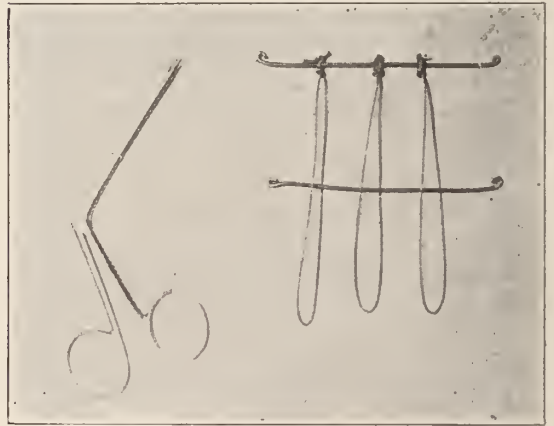


Fig. 1.

capable of being quickly and readily done; it should not endanger the recurrent laryngeal nerves or the parathyroid bodies; and it should furnish easy and certain control of hemorrhage. I have reason to believe that the wire tourniquet does all of these things satisfactorily, and in addition enables one to remove as much or as little of one or both lobes as may be indicated, irrespective of their size.

Operative technique.—The goiter is first exposed by a collar incision, and by separation, or perhaps division, of the sterno-hyoid

*Read at the Annual Meeting of the Colorado State Medical Society, October 5, 6, and 7, 1915.

and thyroid muscles; with the wire tourniquet division is seldom necessary. After ascertaining the proper plane of cleavage, a lobe is dislocated, paying attention to the superior and inferior poles, which may project upwards into the neck or downwards beneath the upper portion of the sternum.

The lobe now lies loosely upon the side of the neck and can generally be pulled well out of the wound, thus putting upon the stretch the superior and inferior thyroid vessels and the attachments to the trachea and isthmus. Sometimes, but by no means always, these attachments form a rather well-defined pedicle.

The gland is now ready to have done to it whatever may be required: a cyst or tumor may be enucleated, the whole lobe removed, or a partial thyroidectomy done. Up to this point the operation does not differ from any of those in common use; but from now on, if a partial thyroidectomy is indicated, which is usually the case, the procedure is entirely different.

The object is so to compress the base of the lobe, including all its vessels, that any desired amount may be cut away without fear of hemorrhage or injury to the nerves or parathyroids. This is accomplished by placing a piece of wire about the size of a knitting-needle upon each side and tying these wires firmly together, thus forming a tourniquet which effectually controls *all* of the circulation, including both the superior and inferior thyroids.

As much as is desirable of the gland may now be cut away without fear of hemorrhage, the edges of the wound brought together and whipped over with a hemostatic suture of catgut, and the wires then removed.

There are of course a number of points to be observed which contribute to smoothness and success:

1. The wires should be rather stiff, but not too rigid to prevent easy bending to suit the particular requirements. Number 17 is a good size. They should be cut with a wire-cutter so that they are long enough to project beyond the gland at each pole, without being long enough to interfere too much with the surrounding parts (Fig. 3). It is

well to turn their sharp ends over into a loop, which can be done in a moment with a pair of forceps, to prevent injury to gloves and tissues (Fig. 1).

2. The cord for binding the wires together must be very strong, so as not to break under the considerable tension necessary to obtain hemostasis. The best thing

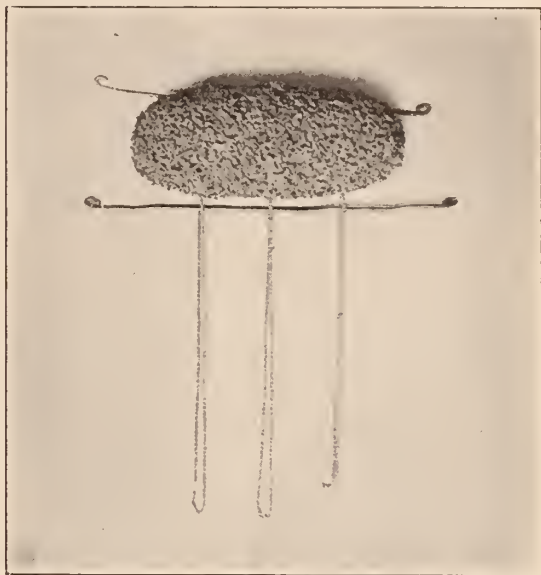


Fig. 2.

for the purpose is heavy braided-linen fishing-line—about No. 2 or 3. Prior to the operation three or four sections are cut from this, each about a foot in length. These are formed into loops the open ends of which are firmly tied with square knots to one of the wires—three for a smaller goiter and four for a larger one (Fig. 1). If sections are to be removed from both lobes, two wires should be prepared in this way.

3. By means of a small pair of blunt-pointed alligator-forceps (Fig. 1) plunged directly through the glandular tissue, the closed ends of the three loops are then dragged through the lobe near its base, one at the center and one near each pole, thus pulling into place the wire to which they are attached (Fig. 2). (For purposes of illustration, a rubber sponge has been used to represent the goiter.)

4. Another wire is now passed through the free ends of the loops on the side opposite to the first wire (Fig. 2). The loops are then divided and tied tightly, begin-

ning with the one in the center, thus firmly approximating the two wires to each other (Fig. 3). The way in which this tying is

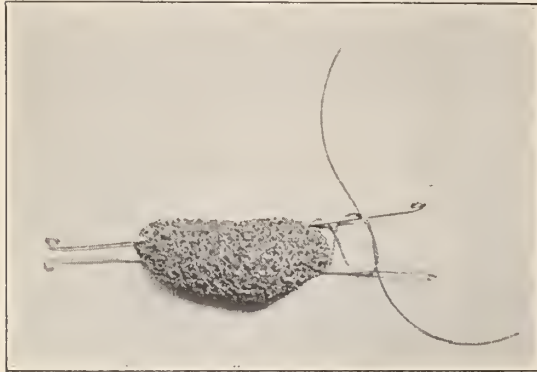


Fig. 3.

done is of importance, only one turn (a half-knot) usually being necessary, because the roughness of the fishline and the circumstances of its application prevent its slipping. This single turn not only saves time, but it also permits the central knot to be drawn tighter at any time if desirable.

The two ligatures near the poles should not only be tied like the one in the center, but their ends should also be wound in opposite directions around the free projecting extremities of both wires and again tied, thus giving additional security and compressing the poles more firmly (Fig. 3).

5. The hemostatic suturing (Fig. 4) may be facilitated by making a v-shaped excision. In Fig 4, for clearness of illustration, much more tissue is left than is usually necessary. It may be better to use a double strand of fine catgut rather than a single and coarser one, and when the tissue is particularly friable or vascular it is often desirable to whip over the raw area twice (down and back) instead of once. If a lit-

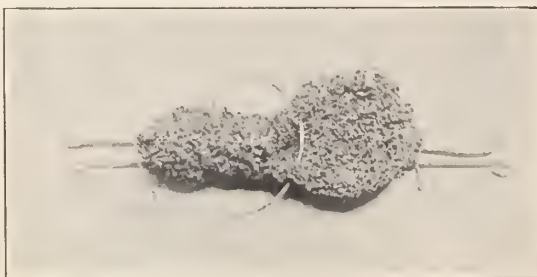


Fig. 4.

tle care is taken at the poles it will be unnecessary to ligate the thyroid vessels separately—in fact, I ceased to do this long ago.

6. When the hemostatic suturing is finished the wires are removed. This can be done by cutting away the knots upon the side of the wire last put in place, so that the other wire may be lifted off with the remnants of the sutures attached; or the sutures may be untied from the projecting ends of the wires, which is easily accomplished, and the remaining half-knots slipped by pulling the wires forcibly apart.

There is seldom any bleeding of consequence from the suture-holes, but if any should occur, it can be checked by compression between the fingers or by a catgut stitch.

The subsequent steps in the operation are such as are usually carried out under ordinary circumstances—stitching of divided fascia and muscles, drainage, and careful union of the skin with subcutaneous sutures or wire clips.

The advantages of the wire tourniquet are several: It is easily and rapidly applied, requiring no particular skill in its adjustment and saving considerable time; it effectually controls all hemorrhage, thus obviating the necessity for crowding the field with hemostatic forceps; it does away with danger to either the recurrent laryngeal nerves or the parathyroid bodies, because it is applied at a safe distance from them, and even if they should by any chance be caught, the pressure is not great enough permanently to injure them; it compresses the goiter without crushing it, which is of importance in Graves' disease at least; and, lastly, the fact that the loops pass through the tissue prevents the wires from slipping during the course of the resection, irrespective of the size of the remaining stump. Neither clamp-forceps nor a ligature of any kind answers the same purpose, nor can they be used except in special cases. Forceps crush the tissues objectionably if they are tightly enough applied to prevent slipping when the lobe is cut away. Sutures are usually placed with much difficulty, and if tight enough to be efficient, they are apt to cut through, especially if the tissues are soft

and vascular. Both forceps and ligatures may crush the nerves or the parathyroids.

In conclusion, those who have had an opportunity of familiarizing themselves with this simple method of operating will, I am sure, recognize its merits.

424 Metropolitan Building.

DISCUSSION.

Charles B. Lyman, Denver: I do not think this paper of Dr. Freeman's is open for a great deal of discussion except in the way of approval. I have not used the method myself, simply for the reason that every man develops a method and technique of his own, and as long as it is satisfactory to him he sticks to it, and the methods I have used up to date I have been satisfied with and continue to use.

I have seen Dr. Freeman use this method in a great many cases, and it seems to me to be extremely satisfactory. I think there are types of goiter in which the method might be objectionable. With large goiters that are not easily delivered, when the tourniquet is applied close to the base it may produce a sufficient amount of tugging on the trachea to interfere with proper respiration. I would rather control the hemorrhage with hemostats, using small ones which are not in the way, using forty or fifty of them, if necessary, thus keeping the field absolutely clean and dry. Most of them can be removed without the necessity of application of ligatures, and the operation can be done in that way as speedily as by any other method. The hemorrhage is absolutely controlled by the tourniquet as I have seen Dr. Freeman use it.

Charles A. Powers, Denver: At first thought, one might wonder whether the important tissues of the thyroid may be apt to contract when they are ligated en masse, and one might perhaps question whether at this day ligation of important tissues en masse is a procedure based entirely on sound surgical principles. I venture to predict that as time goes, Dr. Freeman will resort to the painstaking ligation of individual vessels.

William B. Craig, Denver: I think the profession recognizes the value of the position taken by Dr. Freeman. Outside of enucleation of the tumor, I wish to emphasize the importance of resection, which is an operation that can be done the speediest and with the least loss of blood. It is the operation of choice. It has been my practice, independently of any reading I may have done or observations I have made, to do more resections than enucleations or extirpations. The cases presented to us are not many, but they are of such a nature that, it seems to me, the indications for resection are definite. I find in those cases in which I have tied the blood vessels deliberately it has given annoyance. I would wait around until the patient recovered from the anesthetic, and then ask the patient how she felt. She would say, in a husky voice, "Oh, I am all right." In most instances that hoarseness clears up promptly.

In a recent communication from the Mayos, I find they tie off the pole in some form and leave the ligation of the vessels absolutely for the individual or exceptional case. So I think the position taken by Dr. Freeman is the one commonly accepted now.

One way of controlling hemorrhage is not by the en masse ligature, but by making an ellipti-

cal shaped incision, suturing and thus arresting the hemorrhage in that way, not jugulating the tissues. There are cases in which you can pass an aneurysm needle through two or three poles and control hemorrhage by ligation which may be sufficient in the individual case. If you have a bleeder, or a case with hyperplastic or cystic goiter, the procedure the doctor has recommended and advocated is evidently the proper one. I have a method of securing blood vessels by clamps that are padded. This method is satisfactory. But I am open to conviction, and I should like to see demonstrated the method Dr. Freeman has advocated here today.

Frost C. Buchtel, Denver: In the ordinary case of goiter hemorrhage is not a serious matter. In a case of large infratracheal goiter, particularly if one has associated with the goiter a small sub-retrotracheal lobe, hemorrhage is very serious. In a small goiter that is easily dislocated, I think the use of the tourniquet would be eminently satisfactory. In these cases, however, almost any form of hemostasis is also satisfactory. In the large infratracheal goiter there is scarcely any form of hemostasis which is satisfactory, and in some of the worst cases it is necessary to allow a little bleeding. You let the patient bleed until you get the gland dislocated, and then begin your dissection. If there is danger of secondary hemorrhage, I believe it is best controlled by using the en masse ligature rather than by ligating the individual vessels.

So far as the absorption of the secretion of the thyroid is concerned, I believe that has very little effect. Operators who operate upon a large number of cases of goiter pay absolutely no attention to that at all. If you have a patient who is harmed by absorption of the secretions of the thyroid during the time of the operation, that patient ought not to be operated on, but carried along medically until the case is more or less fit, when the superior poles can be ligated under local anesthesia. In adenomatosis of the thyroid, one ought to examine the thyroid carefully, so that the diseased portion of the thyroid can be removed and the healthy portion allowed to remain. Any form of tourniquet I should think would militate against the careful examination of the gland to the end that the diseased portion should be removed and the healthy portion left. In the bad goiters, where one has occasion to devise some more effective means of controlling hemorrhage, this particular method is not applicable, and in the easy cases one does not need it particularly. It seems to me that it would favor rather slipshod methods of removing the thyroid by favoring a less careful examination of the gland. Therefore, it strikes me that a method that is equally good for all of us is the one that will be most frequently used.

Leonard Freeman, Denver (closing): In answer to Dr. Powers' criticism, he did not understand clearly what I said about the en masse ligature. I do not blame Dr. Powers, I blame myself for not being more explicit. If he will read what I have written after it is published, he will understand exactly what I mean. The control of hemorrhage by suture is an old and reliable method, and we use it in many cases in surgery. It is used in cases of myomectomy—in removing tumors from the uterus—with perfect reliance; it is used universally in operations of gastroenterostomy, in resections of the stomach, and in operations in many other situations about the body. It is reliable in goiters. This is not a question of theory, it is a question of fact, and I am not the only one who has used it. It has been

used for many years in operating upon goiters, and it is a little late in the day for any man to come forward and say the suture is not a reliable method of stopping hemorrhage!

As regards it being a "slipshod" method of operating—perhaps it is; but it has the advantage, even if it is slipshod, of preserving the laryngeal nerves and parathyroid bodies with great certainty. It does control hemorrhage, and you can remove as large a lobe, or just as little of one or both lobes, as you desire. It is a rapid method of operating, it is reliable, as I have demonstrated in over fifty cases; and if the gentlemen who criticize it will try it they may change their ideas—at least, I hope they will.

PNEUMOCOCCUS SORE THROAT IN CHILDREN.*

F. P. GENGENEACH, M.D., DENVER.

In the *British Medical Journal* of April 27th, 1895, Dr. Felix Semon expressed the conviction "that the various forms of acute septic inflammation of the throat and neck, hitherto considered as so many essentially different diseases, are in reality pathologically identical; that they merely represent degrees varying in virulence of one and the same process, . . ."

Heller¹ believes that this statement is still true since by "pathologically identical", Semon meant the same morbid process not necessarily caused by the same germ.

In the *British Medical Journal*, June 26, 1909, Sir Felix Semon, in his "Remarks on a Case of Pneumococcus Invasion of the Throat Upon Which Laryngeal and Pulmonary Tuberculosis Supervened", makes reference to apparently the first cases of pneumococcus invasion of the throat reported in medical literature. He is quoted as follows: "In November, 1908, I delivered at the Polyclinic a lecture on the question of pneumococcus invasion of the throat, which was later published in the *Medical Magazine* for December, 1908. In this lecture I described two cases of a hitherto unrecorded affection of the throat due to pneumococcus invasion. I further stated that these cases were characterized by profound asthenia, by ulceration of the affected parts, by an almost entirely afebrile course, and by complete absence of swelling of the cervical lymphatic glands; that in the first case pneumococci

were present almost in pure culture, whilst in the second case the culture consisted predominantly of pneumococci, and that in both cases towards the end a punched-out loss of substance occurred, whilst by far the greater part of the ulcers healed without leaving any scarring behind."

As far back as 1892, Welch² quoting Foa, referred to a pneumococcus called *Diplococcus lanceolatus* of the edematogenic variety.

In the *Journal of Experimental Medicine*, August 25, 1905, there were reported a number of studies of the pneumococci and allied organisms found in the human mouth; and in the *Journal of Infectious Diseases*, April 6, 1906, Ruediger reports "A Method of Isolating Pneumococci in Mixed Cultures, Such as Throat Cultures."

Elliott³, in 1909, under "Remarks on Acute Pneumococcus Infection of the Pharynx", refers to an epidemic of thirteen cases, four of them his own children. One of his children, a girl of 5, showed a pure culture of pneumococcus from the throat, and also from the ear, after a complicating otitis media.

To Porter⁴, however, belongs perhaps the credit of first recognizing the nature of pneumococcus invasion of the throat. Thus he writes: "In 1904 I attended a child aged 8 years who suffered from enlarged glands, enlarged tonsils, and purulent discharge from both ears, the discharge giving a pure culture of pneumococcus. I sent a report of this case to a medical journal, but, coming from the pen of an obscure member of the profession, it found its abode in an editor's waste-paper basket. Since that time I have attended seven cases presenting various clinical phenomena, but all showing a primary pneumococcal invasion of the throat."

Peacock⁵ reports a case of "Pneumococcus Invasion of the Throat, Followed by Pleuro-Pneumonia and Appendicitis; Operation and Recovery", in a boy of 10 years, whose brother had just recovered from a sore throat thought to have been of influenzal origin; but a swab taken from the throat of the younger boy showed the presence of a large number of pneumococci.

Hirshberg⁶ reports as follows concerning

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6, and 7, 1915.

an epidemic of malignant pneumococcus tonsillitis, in which forty-three cases were studied clinically and by bacteriologic methods:

"The most striking clinical picture in this Baltimore epidemic has been the sharp onset, with the invasion always in the throat, general adenitis, great virulence, fulminant type, death in forty-eight hours in the lethal cases, impossibility of proving milk, water or food responsible in the spread of the epidemic, and the constant presence of the pneumococcus as a possible causative organism."

Thiesen⁷ reports three cases, one of a child aged 7 months, with severe cough and profuse nasal discharge, in which "the entire pharynx, including the tonsillar region, soft palate and uvula, was found to be extremely edematous, and the mucous membrane was covered with the same stringy mucus. The glands on either side of the angle of the jaw were much swollen. Cultures from the nose and throat were negative for Klebs-Loeffler bacilli, but contained pneumococci; that from the nose a pure culture of pneumococci." The child recovered under the administration of urotropin, and the use of a cold antiseptic spray in the pharynx.

To these the writer would like to add the following brief report of three cases in children:

Case 1. Seen in consultation with Dr. N. Wiest. Baby L., girl aged 7 months, breast fed, contracted measles in March, 1913. Was apparently recovering nicely until ten days after the appearance of the eruption. During the night the baby seemed rather restless and had some respiratory disturbance, but the mother did not look at her. The next morning the child was found cyanotic, the neck enormously swollen, and dark colored blood oozing from the mouth and nostrils. Child could not nurse, and could only swallow a few drops of water with the greatest difficulty, and with marked pain.

When seen in consultation that afternoon the symptoms were similar but more marked. The chest examination revealed large numbers of moist râles but no evidence of consolidation. The tongue was swollen and dry and the throat markedly edematous but no

membrane apparent. Strings of bloody mucus had to be frequently removed from the throat, in order that the child might breathe. A swab of the throat revealed a large number of pneumococci. The child was given an injection of nuclein solution and later syringe A of Mulford's pneumococcus vaccine, and the throat swabbed with a watery solution of iodine (2 per cent) and potassium iodide (4 per cent).

Several times during the following night it seemed as if the baby were dying, but toward morning its condition improved. The next morning syringe B, and on the following two morning syringes C and D, were injected.

The general condition of the child continued to improve, but the swelling of the neck persisted and at the end of a week a large abscess on the right side ruptured externally. In the meantime Dr. Wiest had been called east and contrary to his suggestion no other physician had been called, so that this part of the history of the case had to be elicited from the parents. About three weeks later another abscess on the same side ruptured, and about two months later another in the same locality. After that the child rapidly recovered, and except for a mild attack of pertussis several months ago, has since been in excellent health.

Case 2. Referred by Dr. H. R. McGraw. Amy W., 18 months, weight at birth $7\frac{1}{4}$ pounds, breast for thirteen months, weight now 30 pounds, 16 teeth, walking and talking a little; never been ill before. Taken ill in the night with pain in the abdomen, and some fever. Given a dose of oil which was vomited. Next morning an indefinite erythematous rash, slight on body and most prominent on wrists and above ankles. This rash, which continued for a week, was more evident in the morning, and would practically disappear by night. On the third day throat red but no exudate. Culture negative for Klebs-Loeffler bacilli.

Patient first seen by the writer on the sixth day, as it was thought child might be having a mild attack of scarlet fever. Rash still present scattered over body and on face, but more prominent on limbs. It was of the toxic or indigestion type so often seen in

teething babies. Heart, lungs and abdomen negative. Throat still congested but no exudate. Anterior cervical glands slightly enlarged. Ears negative. Temperature 100.5 (axilla). Sensorium clear. Urine negative. Child given calomel and milk of magnesia.

By the tenth day the rash had disappeared but the child suddenly evidenced considerable difficulty in swallowing. Upon examination of the throat there was seen a white, porcelain-like membrane covering both tonsils and extending over the anterior and posterior pillars, soft palate and uvula, but not involving the hard palate or cheeks. The whole pharynx was covered both downward as far as one could see, and also upward into the naso-pharynx; portions of the membrane being discharged from the nostrils.

Tongue coated, anterior cervical glands slightly larger. Child very fretful, unable to sleep and unwilling to take nourishment. Temperature 103.6 per rectum. Urine showed a slight febrile albuminuria, otherwise negative.

Swabs of the nose and throat were made, which were negative for Klebs-Loeffler bacilli, but showed large numbers of pneumococci in association with the micrococcus catarrhalis.

At the suggestion of Dr. Levy, called in consultation, the throat was swabbed two or three times a day with Loeffler's solution, which was later alternated with a watery solution of iodine 1 per cent, and potassium iodide 2 per cent. Portions of the membrane could be removed in swabbing, leaving a very red and very much swollen mucous membrane underneath. The white membrane, which seemed rather a part of the mucous membrane than upon it, would rapidly reform after removal, so efforts to that effect were not persisted in.

Irrigations of the nose and throat with a warm soda solution and also with warm salt and borax solutions were tried, but as they were swallowed in large quantities, later to be vomited, these were stopped after a week's trial.

As soon as the character of the infection was recognized, one-tenth cubic centimeter of a stock vaccine containing 250,000,000 pneumococci and 500,000,000 micrococci ca-

tarrhales to the c. c. was administered, and increased 1/10 c. c. every 3 to 7 days for a total of six injections.

On the 15th day a right otitis media developed, followed two days later by a left otitis media. Examination of the discharge showed a large number of pneumococci. The ears were irrigated every few hours with warm boric acid solutions; after which the canals were wiped as dry as possible.

On the 18th day, coincident with an elevation of the temperature, which had been ranging between 100.5 and 104.5 per rectum, a marked puffiness of the face, especially about the eyes, with a general edema of the body and limbs, was noticed. At the same time a slight cough, which had been noted for several days, and which had been attributed to the ear condition in the absence of any physical signs in the chest, became more marked, and examination of the chest revealed moist râles throughout both lungs.

The urine, which had been repeatedly examined, suddenly became bright reddish in color, very much diminished in amount, and upon examination showed an abundance of albumen, and microscopically, the presence of a large number of blood corpuscles and also hyaline, epithelial, and blood casts.

High colonic flushings with hot salt and borax solutions, alternating every three or four hours with hot packs, were immediately instituted, and digitalin, spartein and strychnia given to combat the cardiac weakness.

In less than a week the edema had entirely disappeared, but the albuminuria persisted for three weeks. The aural discharge also continued for about three weeks.

In the meantime the membrane had gradually disappeared from the throat, having lasted in all about two weeks.

The child was put on Basham's Mixture and later on general tonics with splendid results, evidently due to her wonderful powers of resistance and recuperation.

The most trying problem in the management of the case was the maintenance of nutrition. It seemed perfect torture for the child to swallow even water. For this reason the supply of water for the body was maintained by rectal injections several times

a day. Rectal feedings were also used whenever the bowel would tolerate them. About the only nourishment taken by the mouth was small quantities of junket, and these only due to the wonderful patience and persistency of the nurse, to whom too much credit cannot be given for the ultimate recovery of the child.

This case occurred just about a year and a half ago, and the child now, at the age of 3 years, weighs 40 pounds, looks the perfect picture of health, and has not had a sick day during the past year and a half.

Case 3. Franklin V., aged 3½ years; previous history negative. Seen in December, 1914. Child tires easily, and has dark rings under eyes. Urine markedly acid, otherwise negative. Complaints of indefinite pains in limbs. Cervical glands enlarged, especially on right side. Tonsils large and some of the crypts filled, temperature normal. Responded promptly to eliminative and tonic treatment. One month later had an acute attack of follicular tonsillitis; anterior cervical glands again swollen; considerable dysphagia; temperature by mouth 103.6. Pharynx and tonsil markedly edematous, with small patches of membrane about the crypts of the tonsils. Cover glass examinations made by Dr. Hill of swabbings from the tonsils showed many pneumococci and fewer micrococci catarrhales and staphylococci, which findings were confirmed by culture on blood serum. Throat swabbed regularly with a 25 per cent solution of argyrol. Unguentum Credé applied externally. Salol and small dose of Pulv. acetanilid. comp. internally. Recovery rapid, with disappearance of all symptoms within a week.

According to Heller, "The pneumococcus (including both the Fraenkel and Weichselbaum forms, since in the throat at least there is no demonstrable difference) has been found to be the cause of the following varieties: a, acute erythematous inflammation of the larynx and pharynx; b, pseudo-membranous angina of the larynx and pharynx; c, acute follicular disease of the tonsils; d, erysipelatous, phlegmonous, and abscess inflammation of the throat; in short, practically all possible manifestations. While most of these may occur direct, it is un-

doubted that some may be carried to the throat through blood channels, as shown by Nufeld, who injected pneumococci into the blood vessels of rabbits, which promptly developed erysipelas. It further goes to prove the streptococcus is not the only germ of this affection, as has been universally believed."

As to the use of autogenous vaccines Raw⁸ believes that vaccines should be used in acute pneumococcus infections, pointing out by way of analogy the apparently good results from the use of antityphoid vaccine in acute typhoid as used at the present time in France.

Cole⁹ says that "although pneumococci are present in 80 per cent of normal mouths, in no instance were pneumococci of types 1 (29 per cent), 2 (27 per cent), or 3 (67 per cent) found; all were of group 4 (11 per cent). ("Mortality in Cases of Pneumonia Occurring in the Pennsylvania Hospital.")

In other words, only pneumococci of a comparatively slight degree of virulence are ordinarily found in normal mouths.

He also refers to the treatment of pneumococcus infections with immune serum, in which the results are encouraging but not entirely satisfactory, since—"It is apparent, therefore, that in the actively immunized animal there is some immunity factor which cannot be transferred with the immune serum."

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DISCUSSION.

George H. Cattermole, Boulder: It is probable that babies and young children have not acquired immunity to these throat infections. They do acquire it in time. The pneumococcus, as we know, can remain in the adult's throat or respiratory passages without causing disease. Infants, however, are probably more susceptible. Czerny recommends that babies be isolated from other members of the family when such members are having catarrhal conditions of the throat of any type, especially during epidemics of influenza.

A few years ago one of my colleagues was having an influenzal epidemic in his family. Every child had suffered from it and some of the adults, but the symptoms were not severe. The youngest child, six years of age, developed first a bronchitis and then meningeal symptoms. It happened to be in one of the mining camps, and we suspected it to be a case of epidemic meningitis. However, the child died before we could do anything with serum, and at autopsy we took fluid from the spinal canal and found there had been a pure pneumococcus infection.

Kate Lindsay, Boulder: I am much interested in the question of the hygiene of infancy, and I have been much impressed in my experience to find how very common infections of the structures of the nose and throat are in infants; and yet it is not to be wondered at when we consider what the baby puts into its mouth. To illustrate what an infant may put into its mouth, I will speak of a little occurrence that happened while I was traveling up in the mountains a few years ago. I was traveling with a party of eastern tourists, and they had a poorly nourished child of about eight or ten months old. The baby had a pacifier which was fastened about its neck by a pink ribbon. The pacifier fell on the dirty floor, the conductor picked it up and passed it on to the mother, the infant set up a howl for it, the mother let it fall, a man picked it up, rubbed it on his coat sleeve vigorously, and handed it to the mother, and she in turn rubbed it with her pocket handkerchief and passed it on to the baby. Now consider how many kinds and mixtures of serums and vaccines were needed to have to render that infant immune to the number and varieties of germs upon that pacifier.

Another time I was called upon to visit a small orphan establishment where some children were suffering from ulcerative stomatitis. I found eight little children sitting around a small table with bibs around their necks, little oilcloth bibs,

and an old lady with one bowl and a spoon went around and they held their mouths open like little birds, and first one spoonful was put into one child's mouth, and then another spoonful into another child's mouth. I found that the infection of the ulcerative stomatitis was spread in that way from one child to another.

We have progressed in sanitary matters. We have abolished the roller towel, and we have bubbling drinking fountains, but do we pay enough attention to the environment of the baby or do we consider what goes into its mouth?

Edward C. Hill, Denver: I might emphasize two or three points, one of which is that the pneumococcus can infect any part of the body except the hair, nails and teeth. Dr. Cattermole's remarks recall to my mind a specimen (Dr. Case's patient) that I saw about a year ago in a man who had a balanitis due to a pure growth of the pneumococcus, and in two or three days pneumonia developed.

I recall another very recent case that Dr. Gengenbach had where we found pneumococci in the spinal fluid, the patient having convulsions and coma. That patient developed pneumonia in a few days. We know that ear troubles and particularly eye troubles often show the presence of the pneumococcus.

Another practical point about the pneumococcus is, that it does not ordinarily respond to vaccines so well as non-encapsulated bacteria. We may take the micrococcus catarrhalis, in the ordinary case of common cold, and if one gives big doses of that vaccine it will act very much as quinin does in cases of malaria; but the pneumococcus is more resistant. In the third case Dr. Gengenbach reported he found that the stock vaccine he got from me acted pretty well.

The great fault in giving vaccines in the past in the management of these infections has been in administering too small doses and at too infrequent intervals. With the micrococcus catarrhalis I never give less than one-quarter billion in treating a common cold, and perhaps half a billion the second dose, if it is required, which is not often the case. With the pneumococcus I should think a vaccine of at least one hundred million in the case of a young child might aid in controlling the infection.

A very practical point is the appearance of the throat in pneumococcus infection. Dr. Lindahl a few years ago reported in the *Denver Medical Times* several cases of pneumococcus sore throat in which he described a porcelain-like appearance of the throat and pharynx, which differs decidedly from diphtheric membrane, which appears dirty and ragged, while the former is seemingly incorporated in the mucous membrane, and of a lighter color than the diphtheria membrane.

I think Dr. Gengenbach is to be congratulated on the outcome of the second case particularly, because I have heard from a number of others how sick that little patient was and of the good recovery it made in the end.

Frank P. Gengenbach, Denver (closing): I think we are beginning to recognize how often the pneumococcus itself is the real cause of the throat infection, and, as Dr. Hill suggests, in the cases in which we have this membrane, how it could readily be mistaken for diphtheria. I am just reminded of another case that I had, which I did not include in my paper. The patient was a boy six years of age. In this case I was so positive that it was one of diphtheria that I immediately injected antitoxin. The report came back that it was negative for the Klebs-Loeffler bacillus, but

contained a very large number of pneumococci. Let me emphasize these two points: that the pneumococcus probably can be responsible for a great many varieties of inflammation in various parts of the body, and that pneumococcus invasion of the throat, especially when combined with the porcelain-like membrane, can readily be mistaken for diphtheria. There seem to be two types of the infection, and cases 1 and 2 represent those types. In case 1 there was no real membrane, only some stringy mucus; but marked edema and enlargement of the glands of the neck. In this case the swelling pressed on the veins of the neck, preventing venous return. The other type is represented by case 2, in which there was only slight enlargement of the cervical glands, but marked membrane formation.

THE ETIOLOGY AND DIAGNOSIS OF ENDOMETRITIS*

C. B. INGRAHAM, M.D., DENVER.

In complying with an invitation to speak upon this matter, I must state that I have nothing original to offer, and that what follows is merely an attempt to present a resumé of modern ideas on the subject. Our understanding of the changes which occur in the endometrium have undergone much revision within the last few years.

In 1905 Tucker, taking at random six-text-books, found twenty-seven different varieties of endometritis described, and not a single one of them was mentioned in every book. The description of so many varieties of endometritis leads to an over-estimate of its importance, for the truth is that the endometrium of itself is rather infrequently the seat of any pathologic alteration which would justify treatment directed to it alone. He at this time drew attention to this unwarranted consideration which the subject had received.

In 1906 the Section on Obstetrics and Diseases of Women of the American Medical Association appointed a committee whose duty it was to offer a simplified nomenclature, but owing to the variety of opinions at that time, great difficulty was encountered. Each was inclined to base his nomenclature on personal observations, rather than on a uniform conception of the subject by the clinician and histologist. It is now apparent that the main reason for their failure in unanimity of opinion was the fact

that the cyclic changes in the endometrium incident to the menstrual epoch were not then recognized.

In the true sense of the word, endometritis is the term used to denote the condition induced by the direct action of bacteria or their toxins upon the endometrium (Hurden). In some, especially the gonorrheal and some saprophytic infections, the attack may be limited to the mucous membranes, but in many septic infections, occasionally in gonorrhea, there is more or less invasion of the uterine parenchyma. Of the inflammatory diseases, we have two principal groups, acute and chronic endometritis. The micro-organisms most frequently demonstrated in these affections are the streptococci and the gonococcus, less commonly the colon, diphtheria, or typhoid bacillus, and various saprophytic organisms, and not infrequently the tubercle bacillus. The best example of the acute forms of endometritis are found in the puerperal and post-abortive infections. In gonorrheal infections, when the bacteria get beyond the cervix and invade the tubes, the endometrium is always affected, though in this area they often create no recognizable symptoms. The endometrium seems particularly resistant, due perhaps to its good blood supply, and to the facts that when infected the ends of the uterine tubes tend to become closed and that the drainage of the uterine cavity is especially good.

Outside of the puerperal state, acute endometritis is rare; with the exception of a leucorrhea and some pelvic discomfort there are no especial symptoms connected with it and the diagnosis can only be made from examination of everted material. That it is rare is against common belief, so often a discharge seen coming from the cervix is supposed to have its origin in the uterus. As Kelly remarks, true endometritis is a disease as rare as cervicitis and endocervicitis are common.

In eighteen hundred cases, endometritis showing definite inflammatory changes, exclusive of tuberculosis, was found by T. S. Cullen in only forty-nine instances. This series included examination of the mucosa in many cases of myomata and of pus tubes.

*Read before the Medical Society of the City and County of Denver, November 2, 1915.

Histologically, acute endometritis is characterized by edema, leucocytic infiltration, and increased vascularity of the stroma: with swelling, necrosis and degeneration of the epithelial elements. The epithelial lining may be lacking in places, or there is proliferation, it becoming thickened and forming little papillary outgrowths with a stem of vascular, infiltrated stroma. The uterine glands, in some places, especially near the surface, appear to be compressed by the infiltrated stroma, while in others they may be dilated and filled with polymorphonuclear leucocytes and desquamated epithelium.

Chronic endometritis is also rare. When present it is characterized by unevenness of the mucosa, in which the epithelium is stunted, low, cylindrical, or cuboidal. The glands, in some places, are diminished in number and vary in size; some of them being narrow above and distended below. The epithelium of the dilated glands is somewhat flattened. The stroma is denser than normally, especially in the superficial portions, the nuclei tend to become spindle-shaped, and there is much round-celled infiltration. There are practically no polymorphonuclear leucocytes. The deeper portions of the stroma are often normal and there are no changes in the muscles.

Tuberculosis of the endometrium, with the exception of the miliary type, is a chronic affection. It is rarely primary, being usually associated with tuberculosis of the tubes. It begins as a rule at the fundus, becomes diffuse, and extends into the uterine muscle, or it may be limited to the vicinity of the cornua. In the miliary form the endometrium is studded with small tubercles, but the surface is smooth or slightly granular, and the epithelium is mostly intact. In the ulcerative form, the entire cavity or a large portion of it is lined with typical greyish-yellow caseous material. The glands and stroma in the depths may be normal or the entire mucosa destroyed by the tuberculous process. Occasionally, tubercle bacilli may be demonstrated in the leucorrheal discharge.

There is a senile form of endometritis which differs markedly in some of its clinical

aspects from the ordinary forms found in early life. Inflammatory changes are present in the thin senile endometrium, in which the glands, after dipping for a short distance below the surface, turn to extend parallel to the myometrium. There is a milky, purulent discharge, often offensive, and frequently associated with it an erosion of the cervix, and adhesions and contractions of the vaginal vault; and the vagina, bathed in the irritating secretions, is smooth and reddened. The atrophic vulva is the seat of a vulvitis, accompanied by intense itching. This condition may be mistaken for cancer of the uterus, and this is especially the case when the cervix becomes closed and there is an accumulation of pus within the uterus.

From a study of eighteen cases, two of which had died of erupous pneumonia, three of typhoid, one of dysentery, and twelve of relapsing fever, Massin (*Archiv für Gyn.*, 1891, Vol. 40, p. 146) has concluded that the acute infectious diseases must be regarded as among the causes of uterine disease in women; and especially, he says, in those cases where the disease occurs before puberty.

In all of them he found an inflammatory disease, the inflammation being the same as that found under ordinary circumstances. In many there were hemorrhages, these being present particularly with high temperature.

"It is probable that some of the cases of arrested development in the internal organs of generation as well as cases of chronic tubal disease and ovarian disease seen during later life may be traced to this exanthematous form of endometritis occurring during girlhood." (Penrose.)

Lemanski's observations on malaria and endometritis are interesting (*Revue Prac. d'Obstetrique et de Gynecologie*, 1899, Vol. 15, p. 39). While practicing in Tunis for six years he had ample opportunity for observing this disease. He states that malarial cachexia is a common etiological factor in genital affections of women; that cases of endometritis and metritis thus occurring defy all forms of treatment, even curettage, until a course of specific treatment for malaria is instituted, and that even in cases

where malaria is known to be a factor, curettage is often necessary to effect a cure, in association with specific treatment.

A variety of changes in the endometrium, characterized by hyperplasia and dilatation of the glands, are included under the head of endometritis. These, in a strict sense, do not belong there. By Hurdén they are classified as diseases of the endometrium.

In this class is edema, in which there is a uniformly thickened, soft, translucent swelling of the endometrium, usually associated with gland hypertrophy and dilatation. It is seen under conditions which influence the circulation of the uterus, for example in descensus and retrodisplacements, and occasionally in myomatous uteri.

Lymphangiectasis is a rare condition, characterized by great dilatation of the lymph spaces. Mucous polypi are not at all uncommon.

One of the most characteristic pathological conditions of the mucosa is glandular hypertrophy, erroneously called glandular endometritis. There is a general thickening of the mucous membrane, from five to ten millimeters in thickness. The glands resemble those of the early decidua, the lumen is large; they have a wavy outline; and on cross section they are scalloped or roset-like. Some portions of the endometrium are normal while other portions show marked change. The greatest hypertrophy is found in the deep portions, where, on account of glandular compression, the stroma is scanty. In the superficial portion it is abundant, swollen, and the cells have a resemblance to decidual cells; the blood vessels are slightly dilated; and, as a rule, there is no evidence of an inflammatory process.

Clinically, there is profuse and prolonged menstruation, with a shortening of the intermenstrual period. Sometimes there is menorrhagia, and occasionally continued hemorrhage. Leucorrhea is almost always present.

Polypoid thickening or polypoid endometritis possesses great clinical interest and is one of the most characteristic pathological conditions of the mucosa. It is occasionally mistaken for malignant growth. It is especially frequent at the beginning of

puberty and at the climacteric, and is characterized by profuse menstruation or severe hemorrhage. The mucosa is irregularly thickened, forming polyp-like elevations. The surface epithelium is flattened. The glands vary in size from the normal to those forming cysts one millimeter in diameter; not increased in number but irregularly distributed. In the distended glands, the epithelium is flattened; in others, normal. The stroma is very cellular and abundant, consisting of closely packed, small cells with oval or round nuclei and scarcely any visible body. The blood vessels are very conspicuous, and here and there are large sinuses, resembling those found in the decidua of pregnancy.

In consideration of these types it is necessary to mention the important contribution by Hirschmann and Adler (1908). They have revolutionized our ideas upon this subject, and all subsequent articles of value have had as a basis an acceptance of their findings.

These observers undertook a painstaking study of the uterine mucosa in fifty-eight women at various periods of the menstrual cycle and found that from the beginning of one flow to that of the next there was a constantly changing histologic picture. They divided the cycle into four phases: postmenstrual, interval, premenstrual, and menstrual. At the height of the menstrual flow, the mucous membrane diminishes in thickness, and the glands pour out their secretions, becoming narrow and straight. The surface epithelium is frequently, though not invariably, lost. After a period the epithelium and connective tissue grow rapidly; the glands become larger and wider, though still quite narrow and straight; the epithelium is low and in a state of rest. By about the fifteenth day the cell growth of the epithelium has progressed to such an extent that the glands become somewhat tortuous, and often assume a spiral or cork-screw-like appearance. Finally, six or seven days before the beginning of menstruation, the glands rapidly enlarge and become tortuous, the cells bulge into the lumen, the epithelium is higher and broader, and the lumen is filled

with a mucous secretion. The gland changes are much more marked in the deeper than in the superficial portions of the mucosa, so that there is a well marked differentiation into a superficial compact and a deep spongy layer; thus there is a marked similarity to the young decidua, the resemblance being increased by the fact that the previous small round, oval, or spindle-shaped interglandular stroma cells in many cases assume an appearance approaching that of decidual cells. Even those who maintain that there is an essential difference between the decidua-like cells of menstruation and the true decidual cells of pregnancy have not been able to define wherein the difference lies.

Accordingly, curettings obtained at different periods of the menstrual cycle will show entirely different histological pictures. And many types of endometritis previously described represent a normal stage of endometrial growth. The work of Hitchmann and Adler at once places an interrogation mark after such terms as endometritis glandularis hypertrophica and endometritis glandularis hyperplastica; and the old belief that the finding of decidual cells is diagnostic of pregnancy is dealt a deathblow by their observations.

The criticism of the work of these two men declares (1) that they have taken an extreme view in practically asserting that glandular changes do not occur, excepting in connection with the menstrual process; (2) that the division of the cycle into phases is too schematic for ordinary use; and (3) that the various phases are not so sharply defined that "the menstrual process can be determined with accuracy and often to the day."

Premenstrual changes are found at periods remote from the menstrual epoch. Hartje has employed the term "*Subinvolutio mucosae menstrualis*" to indicate the persistence of premenstrual glands for the first few days of the regeneration period. He suggests that it may be due to a deficiency of the retrogressive changes and that it is to be regarded as pathologic.

Shickele also asserts that marked gland changes may occur without any relation to the menstrual process, as a result of uterine disease.

The differences in the endometrium are supposed to be due to vascular changes. All cases of endometritis are divided, then, into two classes: First, those which are the result of an infection; second, those resulting from circulatory disturbances.

Whatever the underlying cause of menstruation may be, it has as its most striking phenomenon vascular changes. Federn and others have shown that the blood pressure reaches its maximum at the premenstrual stage, the onset of flow being characterized by a fall. The blood pressure curve is, therefore, parallel to the histologic changes and it is not unreasonable to assume that the endometrial pictures are the result of the influence of increased or diminished blood supply, and the thought that a pathological hyperemia may also produce a greater or less degree of permanent change naturally follows.

The various animal experiments have gone to show that the secretory activity of the corpus luteum of the ovary is responsible for menstruation. If we accept the experimental work of Leo Loeb, who has demonstrated that by injection of corpus luteum extract accompanied by stimulation of the endometrium, as by slight injury, a decidual formation is produced, it is easy to believe that alteration in the ovarian secretion, so that an over-abundance or lessened amount of this hormone is present, may be responsible for the pathological changes found in the endometrium. By Lauth the bleeding in these types is called "Ovarian menorrhagia".

For the diagnosis of endometritis, we depend upon the microscopist, and in view of the work of Hitchmann and Adler, with each specimen examined should be given the date of the operation in relation to the stage of the menstrual cycle. The pathologist will then not be exposed to the risk of reporting "hypertrophy of the glands" or some other change which really represents a part of the normal menstrual cycle.

766 Metropolitan Building.

NOTES ON THE TREATMENT OF EN-DOMETRITIS.*

CUTHEERT POWELL, M.D., F.A.C.S., DENVER.

Many gynecologists hold that endometritis seldom exists as a separate and distinct disease, and in considering the subject I shall speak of those conditions generally termed endometritis by the profession.

In view of the fact that the so-called endometritides vary in their etiology and pathology, and that the same treatment is not applicable to all conditions, I shall consider very briefly the treatment of endometritis under four groups:

(1) The condition generally spoken of as simple endometritis, characterized by a more or less irregular bloody discharge not accompanied by changes in the uterus or adnexa.

(2) The non-infectious endometritis, or hypertrophied endometrium due to and accompanying change in the uterus and adnexa such as retro-displacements, fibroids, extra-uterine pregnancy and ovarian cysts.

(3) Gonorrheal endometritis, due to invasion of the uterine cavity by the gonococcus.

(4) Septic endometritis, due to invasion of the uterine cavity by pyogenic organisms following abortions accidental or induced, childbirth, or gynecologic tinkering.

The first, or so-called **simple endometritis**, in which the only symptoms may be and usually are a more or less irregular or profuse bloody discharge, is due, according to numerous investigators, not to any abnormal condition of the endometrium but to constitutional causes, or to changes in the functional activity of the ductless glands. Treatment, therefore, must be directed to the underlying cause. Curettage, in these cases, is of no permanent value and may be provocative of harm. Emil Novak¹ suggests that the occasional success of curettage may be due to the removal of coagulation-inhibiting substances, formed in the ovary and given off in the uterus, according to Schickele,

rather than to the removal of the endometrium. Deaver² believes that more consideration should be given to the estimation of the calcium index, and that girls with a low calcium index should receive from 10 to 25 grains of calcium lactate three times a day.

Local treatments and curettage for this condition are distinctly harmful in young women. In women at the menopause, curettage is indicated for diagnostic purposes only. The microscopic examination of the scrapings will show whether or not we have a carcinoma of the body of the uterus to deal with.

In general, rest in bed, tonics, glandular extracts where indicated, light diet, an empty rectum and an ice bag over the pelvis will in time effect a cure.

The second group, **non-infectious endometritis**, due to changes in the uterus and adnexa, must be treated by correcting the attendant lesion. Treatment directed to the endometrium, it is needless to say, is out of place. Nor is it advisable or safe to remove the hypertrophied endometrium with a curette when operating for the correction of a retrodisplacement, fibroids, cystic ovaries, extra-uterine pregnancy or other pathologic condition of the uterus or adnexa. The correction or removal of the underlying disease will suffice to relieve the non-infected, hypertrophied endometrium.

The third group, or **gonorrheal endometritis**. Gonorrheal infection of the endometrium is probably the most common with which we have to deal. The multiplicity of methods of treating the condition is evidence that none are entirely satisfactory. This is due in part to the fact that so many women suffering from this disease are not sufficiently aware of the ultimate results when improperly treated, and in part to their unwillingness to put up with the discomfort attendant upon its proper treatment.

Rest in bed is essential; the bowels must be kept open; the diet should be light and easily digested.

The vagina should be irrigated at least once daily. The irrigation solution may consist of weak formalin, permanganate of potash, iodine or other germicide. The douche

*Read before the Medical Society of the City and County of Denver, November 2nd, 1915.

¹Novak, Emil. The Pathologic Physiology of Uterine Bleeding. J. A. M. A., vol. lxiii, p. 617.

²Deaver, John B. Hemorrhage from the Non-pregnant Uterus. J. A. M. A., vol. lxi, p. 672.

bag should be hung so as to allow the solution a fall of not over three feet. As a rule the bag is hung much too high and the solution allowed to flow into the vagina under too great pressure. At least three quarts must be used and as hot as can be comfortably borne by the patient. The germicidal action of the solution used is probably of less importance than the mechanical cleansing of the vagina. The use of yeast in the vagina and of vaginal suppositories of lactic acid bacilli have resulted in a considerable reduction of the vaginal discharge.

As the gonococcus seldom burrows to the lymphatics but remains generally on or near the surface, direct applications to the endometrium are of undoubted value when made under proper aseptic conditions.

Clark³ injects 1 c.c. of a 5 per cent solution of tincture of iodine into the uterus, previously anesthetizing the cavity of the uterus by the injection of 1 c.c. of 5 per cent sterile novocaine solution. This treatment is given once a week for four or five weeks. The iodine solution may be applied to the uterus on a cotton-wrapped applicator. Commercial formalin is also applied to the endometrium by means of applicators, but this procedure is extremely painful.

The use of iodine, either by injecting into the uterus or by means of applicators once a week, together with a daily vaginal douche of 2 drams of iodine to the quart of water, has given excellent results in my hands.

Curettage in gonorrheal endometritis is worse than useless, and is distinctly contraindicated.

The fourth group, **septic endometritis**. The treatment of this condition is still the subject of much controversy. Watkins⁴ in 1912 read a paper before the A. M. A., advocating a non-interfering expectant policy. The views expressed at that time by him resulted in the appointment of a committee to investigate the subject. This committee, consisting of Drs. Barton Cook Hirst, Rob-

ert L. Dickinson, and Joseph B. De Lee, reported the result of its investigation to the American Medical Society at the Minneapolis meeting in 1913.⁵

It was surprising to learn that the majority of obstetricians and surgeons cleaned out the septic uterus at once with finger and curet. Intrauterine antiseptic douches were employed by very few. The tampon was generally used to control bleeding in infected cases.

Notwithstanding the opinions of the majority of those answering the inquiries of the committee, it is held by many gynecologists of experience that intra-uterine instrumentation is absolutely contra-indicated in the presence of septic infection.

Watkins, quoted above, concluded that "retained products of conception should be left to escape spontaneously. In individual instances, gauze packing should be used to check bleeding, to hasten separation of the tissues and to stimulate uterine contractions".

Dr. H. G. Wetherill⁶ of this city, in a paper read in February, 1903, (over twelve years ago) before the El Paso County Medical Society, strongly condemned the use of the curet or any intra-uterine instrumentation in the presence of sepsis and at that time advocated the use of 50 per cent alcohol irrigation as suggested by Carossa, through a double drainage tube devised by himself.

Since the report of the committee above referred to, many articles by able men have appeared unqualifiedly condemning any instrumental attempts to clean out a septic uterus.

C. J. Miller⁷ states that in the past two years he has practically dispensed with intra-uterine treatment in acute septic endometritis, except in cases associated with uterine hemorrhage. In the latter cases he controls bleeding with the iodoform gauze

³Clark, John G. Pathology and Treatment of Gonorrheal Cervicitis and Endometritis. Amer. Jour. of Obst., June, 1914, p. 961.

⁴Watkins, Thos. J. Puerperal Infection. J. A. M. A., vol. lix, p. 703.

⁵Hirst-Dickinson and DeLee. Report of the Committee on the Treatment of Puerperal Fever. J. A. M. A., vol. lxi, p. 1528.

⁶Wetherill, H. G. The Rational Treatment of Puerperal Infection. The Amer. Jour. of Obst., vol. xlvii, No. 5.

⁷Miller, C. J. The Surgical Treatment of Puerperal Infection. Texas St. J. Med., vol. xi, No. 7.

pack. The retained masses are usually discharged when the gauze is removed.

Dowd⁸ treats septic endometritis of the puerperium with alcohol injection through a gauze wrapped tube, extending to the fundus. He injects 2 ounces of a 25 to 50 per cent solution of alcohol every two hours.

M. Henkel⁹ states that in infected abortion, a conservative operation is often necessary. The operation should be with the finger; no irrigation and no curettage should be done.

Winter¹⁰ holds that puerperal fever is not caused by retention of remnants of placenta and that intra-uterine instrumentation opens an opportunity for further infection.

My own experience, including ten years' service on the gynecologic staff of the City and County Hospital, warrants the statement that surgical inactivity in the presence of acute infections of the endometrium is of paramount importance.

Patients having retained secundines, accompanied by bleeding, following abortion or delivery at term, are put at absolute rest in bed. Ergot or pituitrin, sometimes both, are administered in an endeavor to assist the contractions of the uterus. Vaginal examinations are not made. Should the bleeding show a tendency to increase after one to four days, the patients are placed on the operating table, the external genitalia carefully cleansed, and without an anesthetic the uterus is very gently explored with placenta forceps, large fragments of placenta or membrane being carefully picked out. No attempt is made to thoroughly clean the uterus, but this is packed with iodoform gauze and the patient placed in bed. Salt solution is given freely by rectum.

If the patient has been curetted previously or a history of instrumental abortion has been obtained, and the patient is septic, no attempt is made to remove retained tissues; but alcohol irrigation of the uterus through

a double drainage tube is instituted as practiced by Wetherill.

In addition, these patients are given mild laxatives, limited diet, strychnine or other stimulants as indicated; occasionally, autogenous vaccines seem to be beneficial. Postural positions are of no benefit, except in those cases losing large quantities of blood, when the foot of the bed is raised 12 to 18 inches as an aid to the circulation.

To recapitulate:

In non-infective so-called endometritis, the underlying cause must be treated.

In gonorrheal endometritis, rest in bed with gentle vaginal douches and the direct application of tincture of iodine to the endometrium seems to give the most favorable results.

Severe and protracted bleeding due to retained tissue, following abortion or delivery at term, is best treated by packing. Large pieces of tissue may be gently removed with placenta forceps.

In the presence of frank sepsis, alcohol irrigations through a double drainage tube are most valuable.

The use of the curet is of doubtful value in cases of non-infective endometritis, except for diagnostic purposes. It is harmful in gonorrheal endometritis, and its use is little short of criminal in acute septic endometritis.

936 Metropolitan Building.

ETHICAL MEDICINE.*

M. R. FOX, M.D., STERLING.

To unearth the corner stone of our chosen art, about 150 A. D. the Hebrews had a script known as the Talmud. It was not a thesis on medicine or ethics, but embodied descriptions of methods used, which lead us to respect their crude medicine as the beginning.

The first great classical work on ethics was written in the fourth century B. C. by the Greek philosopher Aristotle, the son of a famous physician, though not himself a practitioner of medicine. So far as the origin of ethics and medicine is concerned, we

⁸Dowd, A. F. Alcohol Drain Treatment of Puerperal Temperature. Jour. M. Soc. N. J., vol. xii, p. 228.

⁹Henkel, M. Puerperal Infection of Wounds in the Light of Recent Research. Abst. by Surg. Gyn. and Obs., vol. xx, No. 6.

¹⁰Winter, G. Retention of Placenta and Puerperal Fever. Abst. by Surg. Gyn. and Obst., vol. xx, No. 6.

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6, and 7, 1915.

owe the glory to our Grecian forefathers for compiling the crude existing principles and establishing a permanent profession.

We may think of Hippocrates as the father of diagnosis, or the clinical physician, and Galen as the father of anatomy or the surgeon. The character and conduct of both were held in high esteem by the Grecian and Roman philosophers of their day. Hippocrates was a native of the island of Cos, in the Ægean Sea, and Galen, his intellectual successor, was born about six centuries later at Pergamos, a famous city of Asia Minor.

Hippocrates compiled a medical code of ethics, the oath of fidelity to which was taken by all entering upon the practice of ethical medicine, and which is the basis of our code today, namely: To protect their teachers from indigence, to train any children of their own in the profession if they desire it, to live on the regimen recommended as best to patients, to give no deleterious medicines, to enter the homes of the sick for the purpose of healing only, to be discreet in all that may be heard or seen in furtherance of our profession, to lead a pure and self-sacrificing life.

All through the ages the medical practitioner has been influential and instrumental in blotting out infections afflicting the commonwealth. Our health laws are the result of the physician's constant effort, and still we have as much room to work now as ever, and the more we know the more scared we are to live on this contaminated earth without a halo of antiseptics around us.

From the hygienic standpoint we have been the educators of the masses. We endeavor to agitate the need of pure milk, water, and food, careful attention to garbage, sewage, dust, odors, flies, mosquitoes, rats, mice and all other vermin, as well as unnecessary noises, poor ventilation, piggeries and unsanitary places, and personal inspection. Yet there are in our prisons from one to two thousand people who vomit, expectorate, urinate and defecate in a bucket with only a door for ventilation.

There are three main factors we expect from the commonwealth, loyalty, honest fees and the exclusion of illegal practitioners. We expect loyalty because our profes-

sion is worthy of it whether we are or not; fees because the pursuit of our profession is extremely expensive. I believe we are accustomed to do too much for nothing. The public owe us our fee and we should be able and willing to deliver services worthy of the same and expect it. We must be businesslike in our profession. The illegal practitioner should be excluded because he is not worthy of his hire.

In speaking of the medical practitioner and his colleagues I shall refer to honest practitioners. With all others I believe we shall do better not to mix, but on the contrary, we should be enthusiastic in getting laws passed by our legislature to put them out of business. There are many jealousies among good physicians that we shall do well to overlook, and I believe they all arise from not acting squarely with the other fellow. We are apt to think that the other fellow is trying to do it all, but so long as he is using ethical methods it is our duty to support him. If he is a society member and we have aught against him we should do better to bring it up at our meetings and talk it over in a straightforward way. In a word, let us work squarely and all together, and we shall eventually accomplish something.

It is the duty of our profession to safeguard our interests. If there is an ethical man who does not belong to our medical society, let us get him in. If there is an unethical practitioner in the state of Colorado, let us expose him and all of his co-workers. Let us expose without fear before the right tribunals everything that is not for the betterment of the profession. Let us make our medical societies big enough and clean enough so that our sole aim in them will be to promote medical welfare.

If there is one thing that helps it is a good, clean council. It safeguards the attending physician and satisfies the patient. Serious, difficult and doubtful cases should be counselled, and often it is better for the physician to request counsel and not wait for the patient to get a little scared or suspicious. Let us learn one thing at this meeting, and that is, to be big enough, clean enough and square enough to use our ethics, and not display jealousy. The consulting physician should always be punctual, frank

and candid. If the consultant arrives first he should wait until the attending physician is there, unless he is from a distance and the case is urgent. Then he may examine the patient tactfully and if necessary mail his opinion to the attending physician, never giving it to the relatives until the council has been completed.

The meetings of our societies are for the upbuilding of the medical profession and should mark progress in our welfare. Three important planks in our platform should be promptness, program and efficiency. We need to begin on time in order to close on time, as our business requires promptness. We need a program that our time may be profitably spent together. If we are to be at our best in the community we must have efficient work done in our societies, and then our members will be there to help us. We do not want to be what we are termed by our opponents, a medical trust, but a united band for a higher professional standard.

The statutes demand that we do thus and so, but when we try to get laws requiring the quacks and nostrums to qualify as the medical practitioner is required to do, the Christian Scientists, osteopaths, chiropractors, mental healers and illegal practitioners cry, "Medical Trust." That sounds rather vicious to the common people, and the legislators join in, and we need a medical trust to overwhelm them. It is here at this convention that some steps should be taken to create and adopt means by which we can all work together when anything pertaining to our profession is at stake.

There are certain laws to which we must conform in order to maintain our highest efficiency. Among them are those relating to the recording of vital statistics, narcotics, etc. Some of these things have been sadly neglected in the past, and in some communities are not very well attended to now. We should look after these matters promptly. It raises our standard of efficiency that much, and in the eyes of the law makes us good citizens.

I think as a State Society we should plead for correct diagnosis. It is easy to have a big, meaningless name to give the laity as a tentative diagnosis, which they do not un-

derstand but which covers our ignorance, but this is not efficiency.

We should employ every practicable means to diagnose our cases. I say practicable methods, for there are many fads whose efficacy has not been surely proven, and we do best to wait on them and use the means which have been confirmed by time, ever remembering that what makes us seem up to date to-day may have passed to-morrow. Do not slight your patients. They want to be thoroughly examined and are more willing to pay you for a good examination than a slighting one. There are few cases that we shall slip up on if we take the time and available means to diagnose them. This is one of the best ways to safeguard our profession and make reputations for ourselves.

The ethical treatment of diseases and diseased conditions should be based on pharmacopeal remedies applied scientifically. We have allowed ourselves to use proprietary remedies and compounds too much for our own good. The profession has become so flooded with these mixtures that compounding and dispensing have lost their science. There are certain morbid conditions and diseases for which a specific is known, and outside of these specifics, drugs and appliances are used symptomatically. We know certain drugs have certain functions and actions, and out of the knowledge of our forefathers and our own experience we apply them.

The treatment of diseases has almost wholly changed in the last fifty years. The crude prescription used in the time of our Grecian forefathers, namely, "Toes of a Dog, Ripe Dates, Asses' Hoofs, aa. M. Boil in a pan of oil. Sig: Apply," has ceased to be used. There are certain fundamental drugs that we now employ and doubtless always shall. The treating of diseased conditions is a matter of using every available means that produces good results, but not putting off the sure thing until everything else fails. I have no sympathy for the fellow who boasts of cures. You can make up your mind that he needs watching.

The treatment of diseases and morbid conditions by surgical means should only be done after a careful diagnosis, or as much

of a diagnosis as can be made. The internist has done much to help surgery in this respect, and as time goes on probably will do more. Specializing in definite branches of treatment is perfectly proper, for even general medicine outside of the specialties is more than the average person can master; but I believe the general practitioner is not just to himself in passing up work he is proficient in to the specialist, letting the specialist take the cream and the other fellow the skimmed milk; neither am I in sympathy with fee-splitting.

There are a great many difficult operations the general practitioner cannot attempt successfully, and these I believe should be turned over to specialists.

In conclusion, as we look over the early history of ethics and medicine we are reminded of the high standing of our forefathers, and the advancement which has been made since their day in the healing art. Our forefathers held the profession more sacred than we are inclined to do. We are placed in a position to know of the dangers wrought by careless and filthy living, and it is our duty as citizens to be constant lovers and preachers of hygiene.

With our fellow practitioners our code of ethics is what we must stand by. All high-class physicians recognize the necessity of our code of ethics. Strange as it may seem, some physicians are antagonistic to the American Medical Association, because they say the code is an A. M. A. invention; but the code of ethical medicine was in existence ages before the A. M. A. was ever heard of. It is our duty to show ourselves approved workmen that need not to be ashamed, having up-to-date tools and methods.

In our diagnosis of cases let us use every means at our disposal, with the love of scientific accuracy in our veins. I believe the day is not far hence when the quack diagnostician will be forever discarded. The treatment of disease is unquestionably based on accurate diagnosis. The day of loading and shooting before taking aim is passing, if it has not already passed.

To discover the cause of the disease must be our first aim, and the removal or neutralizing of this cause is the final effect to be

attained. This correct diagnosis and scientific treatment based on up-to-date principles spell efficiency in our medical economy, and are the alpha and omega of ethical medicine.

DISCUSSION.

Josiah N. Hall, Denver: I do not think so sound a paper as this should be passed by without a word of compliment to the author. I do not know that I can take exception to anything the author has said. I think we must recognize that medicine is spreading out wider and wider all the time, and it is a different thing from what it was a hundred years ago to keep up with the rapid progress that is being made. Two hundred years ago an educated man started out with a definite idea of mastering all knowledge in relation to medicine, but if he were to start out with any such idea now it would take him a million years to arrive at the point desired. In the practice of medicine more and more new things are constantly coming up so that no one can keep pace with the rapid progress that is being made in the various departments. It is a hard thing for one to adjust himself exactly along these various lines, and to know how far he can go without doing injustice to himself in trying to turn certain things or cases over to other doctors, or how quickly he can stop without doing injustice to his patients.

With reference to what the essayist said about consultation and consultants, it is a matter in which we are all interested. I think the best way to manage that is to remember what the golden rule says. The practitioner should put himself in the position of the other man and expect from him the same consideration as a consultant that he would extend to the other man were he placed in the same position, and I think that will answer pretty well for a rule.

M. R. Fox (closing): I do not think I have anything further to add of any particular importance. We have learned a great deal on the subject of medical ethics, and some of us ought to put what we have learned into use. At the present time there are a great many things occurring in our state that are not exactly ethical from the standpoint of my interpretation of medical ethics. As we look back over this subject, we are reminded that our forefathers in medicine were great men and learned men. They did not forget their responsibility to the profession, nor should we.

ENDOWMENT OF \$500,000 FOR AMERICAN COLLEGE OF SURGEONS.

The American College of Surgeons begins the new year with an announcement that it has secured from its Fellows an endowment fund of \$500,000. This fund is to be held in perpetuity, the income only to be used to advance the purposes of the College. By this means lasting progress toward the purposes of the College is assured.

Primarily the College, which now has about 3,400 Fellows, is concerned with the training of surgeons. Its ideals are to find concrete expression along the following lines of activity:

1. The Regents propose at an early date to present a clear conception of the College to the undergraduate medical students of this continent. They will ask each senior student who expects to

specialize in general surgery or any branch of surgery to register with the College. As these students later serve as internes and as surgical assistants, they will be requested to report these facts to the College. The College, in turn, will systematically seek information as to the ability and character of such men; and the information thus obtained will become the basis of admission to Fellowship in the College. In addition to this procedure, the Regents will insist upon the proper keeping of case histories, and they will endeavor to stimulate in these men in training right ideals of medical practice. In this program they ask the active cooperation of the faculties of the medical schools and of all practitioners of medicine.

2. The College will seek accurate data on all matters which relate to hospitals. From time to time it will publish studies upon hospital problems, the purpose being always to be helpful to the hospitals. These publications will inform recent medical graduates as to where they may seek adequate general or special training in surgery. The College will deal with such problems as (a) the proper equipment for medical diagnosis, e. g., well equipped laboratories for chemical, pathological, and X-ray work; (b) the proper forms for case histories and the facilities for keeping these records; (c) the management and the curricula of the nurses' training schools; (d) the specialization essential in any well organized hospital.

3. The College will ask the faculties of medical schools to consider the advisability of conferring a supplementary degree of proficiency in general surgery and in the various specialties of surgery.

4. The College will issue readable monographs, educational in nature, to the press, to the general public, to hospital trustees, and to the profession of medicine upon subjects of medical procedure and the whole meaning of fitness to practice surgery.

The Director of the American College of Surgeons, John G. Bowman, epitomizes the purposes of the College as being concerned directly with matters of character and of training, with the betterment of hospitals and of the teaching facilities of medical schools, with laws which relate to medical practice and privilege, and with an unselfish protection of the public from incompetent service; in a word, as embodying those ideals which have stood the test of centuries.

At its last session the Michigan Legislature passed a law regulating the sale of poisonous fly paper. The journal of the Michigan State Medical Society again calls attention to the danger to children from arsenical fly poison. During the summer of 1915 a considerable number of cases, eight of them fatal, were recorded as due to this cause.

News Notes

Dr. Sherman Williams, Denver city coroner, recently called attention to the fact that in cases of death occurring without the presence of a physician, it is the duty of the physician called in after death to notify the coroner's office so that proper inquiry may be made as to the cause of death. In one case a woman who had died at 6 o'clock in the evening was cremated the next day, the possibility of investigation as to the actual cause of death being rendered impossible.

Dr. H. A. La Moure, superintendent of the state insane asylum at Pueblo, has been adjudged guilty of contempt of court for refusing to receive

into the asylum a number of patients sent from Denver, in pursuance of the court order of Judge Rothberger.

On the 21st of December the officers of the National Guard of Colorado gave a reception at the house of Dr. Lingenfelter to welcome Dr. Jolley home from Serbia. Dr. Jolley is looking remarkably well after his long absence and continuous service among the victims of the European War. With five other doctors and eleven nurses of the American Red Cross, he stayed behind in Belgrade when the Teutonic attack had driven out the Serbian army. In fourteen days the six surgeons and eleven nurses took care of 3,000 wounded soldiers from the armies of Serbia, Austria and Germany.

The Supreme Court of the United States has confirmed the decision of the Federal Court of Nebraska against a Chicago drug house which had shipped drugs to Omaha, the virtual effect being to uphold the amendment to the Pure Food Law passed by Congress at its last session. This amendment prohibits false statements on labels or in circulars concerning drugs (including patent medicines) shipped in interstate commerce.

Another victim of criminal Christian Science lately died in Denver of diphtheria. The patient, a boy of 10 years, was left without the care of a physician until an hour before he died. He was suffering from laryngeal tuberculosis, and intubation was done too late to save his life.

The scene of revelry usually conducted by Drs. Black, Coover, Freeman, Hall, Levy and Lyman on January 1st in the Metropolitan Building, Denver, was pushed forward this time to the morning of Christmas day, so as to escape the provisions of the new prohibition law. The real character of the gathering was thinly masked under the name of Metropolitan Irrigation Congress. We sigh to think of what must happen or fail to happen a year from now.

The personal attack conducted for some time by Dr. G. F. Lydston upon Dr. G. H. Simmons, secretary of the American Medical Association, has just resulted in a technical decision by the Supreme Court of Illinois to the effect that the business meetings of the Association must be conducted in Illinois.

The Pueblo County Clinical and Pathological Society was formed on December 9th, 1915. The new society was organized by twenty-four Pueblo physicians. Its officers are: President, Dr. Crum Epler; vice president, Dr. E. A. Elder; historian, Dr. Fred Heller; secretary-treasurer, Dr. D. E. Hoag. The membership is limited to thirty and the society will meet on the second Wednesday of each month.

The annual dinner of the Pueblo County Medical Association was held December 15 in the Congress Hotel. Dr. Wilbur Lucas presided as toastmaster and musical numbers were furnished by Dr. Frederick Pierce, Dr. J. L. Schwer and Dr. C. W. Mavnard.

Short talks were made by Dr. C. F. Taylor, president of the society; Dr. J. H. Woodbridge, secretary, and by a number of other physicians.

Boards will be convened at the Bureau of Public Health Service, 3 "B" Street, S. E., Washington, D. C., and at a number of the Marine Hospitals of the Service, on Monday, January 24, 1916, for the purpose of examining candidates for admission to the grade of Assistant Surgeon in the Public Health Service.

The Twelfth Annual Conference on Medical Education, Public Health and Legislation will be held at the Congress Hotel, Chicago, Monday and Tuesday, February 7 and 8, 1916, under the auspices of the Council on Medical Education and

the Council on Health and Public Instruction of the American Medical Association. Monday, February 7th, will be devoted to medical education, and Tuesday, February 8th, to medical legislation and public health.

Dr. G. F. Libby is making a smooth and rapid recovery from his recent illness.

Dr. W. L. Edmundson left Denver for Chicago for the purpose of taking the examination for the post of surgeon in the United States army.

Dr. J. W. Amesse was a guest of the North-eastern Medical Society at their annual meeting on January 6th, and gave an address on "Superstition in Medicine".

Dr. G. P. Lingenfelter's automobile was rather badly damaged in a collision with a speeding delivery wagon on January 11th. Fortunately the doctor was not injured.

Dr. Carl G. Parsons of Denver is justly proud of certain information contained in the issue of the Journal of the A. M. A. for December 11, 1915. The June report of the California State Board of Medical Examiners shows the one candidate representing the Denver and Gross College of Medicine to have obtained a grade of 96.8 per cent. This is not only the highest grade obtained by anyone in that particular examination, but is also the highest grade obtained in any examination for several years back. The candidate in question was Dr. C. G. P.

The Pueblo Chieftain for January 2nd contained an excellent account by Dr. John G. Wolf of the activities of the Pueblo Health Department during 1915. An interesting minor activity of the office was the sending out of a booklet on infant care to the mother of each child whose birth was registered.

Dr. W. P. Dooley has left Kersey for Akron, where he has bought out an office and practice.

Dr. Elwood Gray, formerly a practitioner at Grand Junction, died in Ottwell, Ind., at the end of December.

Dr. Herriman of Alamosa, who has made a good recovery from his recent attack of scarlet fever followed by middle ear trouble, lately paid a visit to Denver.

Medicine cases belonging to two Fort Collins physicians were recently stolen from their automobiles. The theft was attributed to drug habitues.

Dr. G. H. Cattermole of Boulder will in the future divide his time between Denver and his home town.

Dr. F. S. Rawls is removing from Hot Sulphur Springs to Kremmling.

Dr. A. W. McArthur of Kansas City, Mo., has located in Delta, Colo.

Dr. J. G. Clayton of Craig has disposed of his medical practice to Dr. M. D. Brown.

Dr. E. I. Raymond has removed from Windsor to Wellington.

Dr. Paul J. Leyda of Lafayette has been receiving belated congratulations on account of his marriage to Miss Edythe Smith, which occurred more than a year ago, but was kept secret until recently.

Dr. L. J. Weldon, Denver, was married on December 16th to Miss Mary Elizabeth Purnelle, of 1480 High Street, Denver.

Dr. C. E. Walker of Denver made a trip to California before Christmas.

Dr. A. H. Friedmann of Colorado Springs is absent in New York for a period of seven months.

Dr. John Inglis, Denver, paid a visit to the Chicago clinics just before Christmas.

Dr. B. B. Frankel, Denver, was operated on for

chronic appendicitis and bladder trouble on December 14th, 1915.

Drs. A. L. and J. L. Stubbs, La Junta, returned on December 26th from a three weeks' trip to California.

Dr. J. F. Kearns, who had practiced in La Junta since 1900, died there of pneumonia on December 24th. He was born in Kenmore, province of Ontario, Canada, in 1863, and graduated in 1893 from McGill University, Montreal. He had been in Colorado since 1894. He had served as mayor of La Junta, as president of the Otero County Medical Association, and in other prominent positions.

Dr. J. F. Condon, aged 40 years, and for twenty-four years a resident of Breckenridge, died on December 5th at St. Luke's Hospital. Dr. Condon was a native of Cassopolis, Mich., and a graduate of Ann Arbor.

El Paso County Notes.

Dr. D. A. Vanderhoof is spending the month of January in California visiting with his parents.

Dr. and Mrs. George Burton Gilbert are the parents of a son born December 24th, 1915.

Dr. Paul M. Lennox spent a few weeks at Rochester, Minn., in December.

Dr. Joseph F. Wallace, resident physician at the Modern Woodmen Sanitarium, Woodmen, Colo., is visiting Chicago and other eastern cities for post-graduate work.

Dr. and Mrs. Giese were Pueblo visitors January 1st, 1916.

Dr. W. G. Gunn has taken the position of house physician at the Printers' Home made vacant by the resignation of Dr. J. B. Crouch, who has accepted a similar position at the Modern Woodmen Sanitarium, Woodmen, Colo.

Dr. Edward Moore, who had been ill for some months, has resumed his work at Star Ranch in the Pines.

Medical Societies

EL PASO COUNTY.

The regular monthly meeting of the **El Paso County Medical Society** was held at the library in the Elks Home on December 8th, 1915, at 8:15 p. m., with the vice president, Dr. McKinnie presiding and thirty-seven members present.

The resolutions drafted on account of the death of Dr. Alexander Perry were read and adopted.

The annual report of Dr. G. A. Boyd, librarian, was read and the recommendations contained therein were adopted, and a vote of thanks was given Dr. Boyd for the large amount of labor expended in moving and arranging the library.

A commission composed of ten men was appointed to investigate the Manitou mineral waters and to report to the society as to their medicinal value.

The following officers were elected for the ensuing year: President, Dr. G. A. Boyd; vice president, Dr. O. R. Gillett; secretary, Dr. G. B. Gilmore; treasurer, Dr. G. B. Webb; state delegates, Dr. McConnell; first alternate, Dr. Webb; second alternate, Dr. C. R. Arnold; Dr. Stough; first alternate, Dr. Bortree; second alternate, Dr. Allen.

Dr. George A. Boyd, president-elect of the **El Paso County Medical Society**, entertained the members of the society at 7 o'clock dinner on the evening of December 16th, 1915, at the library in the Elks Home.

There was a full attendance, and after the dinner a plan of work for the ensuing year was out-

lined. It was the wish of the society that dinner precede the program at each meeting, and that at least ten men should take part in each program.

G. B. GILMORE,
Secretary.

GARFIELD COUNTY.

The Garfield County Medical Society met at the office of the secretary in Glenwood Springs on the evening of December 9th, 1915, with Dr. W. G. Lockhard presiding.

The following officers were elected for the ensuing year: President, Dr. W. R. Tubbs of Carbondale; vice president, Dr. J. P. Riddle of Glenwood Springs; censor, for three years, Dr. W. G. Lockhard of New Castle.

W. W. FRANK,
Secretary.

LAKE COUNTY.

A regular meeting of the Lake County Medical Society was held January 6, 1916, in the offices of Dr. A. J. McDonald. The following members were present: President, A. J. McDonald; vice president, H. A. Calkins, R. J. McDonald, B. F. Griffith, J. C. Strong and E. A. Whitmore, and J. Smits visiting. Several interesting cases were reported.

Dr. J. Smits, formerly of Glenwood Springs made application and was elected a member of the society.

Dr. E. A. Whitmore entertained the society with an informal lunch.

J. C. STRONG,
Secretary.

NORTHEAST COLORADO.

The Northeast Medical Society met in regular session Wednesday afternoon, January 5th, 1916.

After a paper by Dr. M. R. Fox on the "Circulation", the annual election of officers was held. Dr. Fox's paper was highly complimented and well discussed.

The following officers were elected for the coming year: Dr. J. K. Dawson, president; Dr. J. E. Naugle, vice president; Dr. N. Eugenia Barney, secretary-treasurer. Board of Censors: Dr. Wm. Greig, Dr. M. R. Fox, Dr. J. C. Chipman. Delegate to State Meeting, Dr. J. C. Chipman; alternates, Dr. J. E. Naugle, Dr. M. R. Fox. Programme Committee: Dr. Myron L. Babcock, Dr. J. C. Chipman, Dr. J. K. Dawson. Reporter, Dr. Myron L. Babcock.

Dr. Dawson in a few well-chosen words thanked the society for the honor of being its president and pledged himself to do his best for its future welfare.

At 8 p. m. the annual banquet was held, at the Annex Hotel. This was a very enjoyable affair; wit, laughter and song flowed like Mum's extra dry. Dr. J. H. Daniels, the retiring president, acted as toastmaster, which office he filled in a very satisfactory manner.

Dr. J. C. Chipman responded to the toast "Looking Forward"; Dr. J. H. Bush, "Be Good and Live Long"; Dr. J. C. Latta, "Experiences of a Country Doctor"; Mrs. M. R. Fox, "The Doctor From the Woman's Viewpoint". Miss Louise Bush played "Berceuse From the Opera of Jocelyn"; Mrs. M. L. Babcock sang "My Ain Folk"; Miss Ruth Smith played "Annie Laurie", with variations; Miss

Geneva Bush sang Dr. Babcock's latest song, "I'm Glad I Live in the U. S. A."

Dr. J. W. Amesse of Denver was the guest of honor and delivered the principal address of the evening. Dr. Amesse is an orator of rare ability and he made a great hit with everyone, especially the ladies. His address was full of wit, and he gave us a knowledge of the Philippines and their people that was very interesting. At the conclusion of his address the society extended him a vote of thanks for the courtesy he had shown in visiting us and hoped that he would come again.

MYRON L. BABCOCK,
Reporter.

OTERO COUNTY.

The Otero County Medical Society met in regular session on December 21, 1915, Dr. A. S. Brunk presiding.

The following officers were elected for 1916: President, Dr. F. W. Maier; vice president, Dr. Frank Finney; secretary and treasurer, Dr. R. S. Johnston; delegate, Dr. A. S. Brunk.

The program was given by the dentists of La Junta, as follows:

"Antrum Infections", by Dr. J. C. King.

"Orthodontia", by Dr. John Marquardt.

"Pyorrhea", by Dr. H. S. Greene.

"Oral Hygiene", by Dr. C. R. Hubbel.

These subjects were found to be of general interest. The papers were excellent, and were enthusiastically discussed.

Dr. W. H. Shepard of Denver was present and responded.

R. S. JOHNSTON,
Secretary.

PROWERS COUNTY.

The Prowers County Medical Society met with the president, Dr. W. O. Sheller, at Lamar, on January 4, 1916. Papers were read by Drs. Likes and Friend. The paper of Dr. Likes had been published. It was voted to have Dr. Friend's paper published. Members present were: Burnett, Wilson, Sheller, Knuckey, Fere, Davis, Likes, Friend; visitors, Braemser and Fields, both of whom were favorably reported on by the censors and voted in as members, after which the members and their wives were dined by the president, and there was a ride over the city and visit to the Helvetia condensary, the plant that places Lamar on the map.

F. MILTON FRIEND,
Secretary-Treasurer.

PUEBLO COUNTY.

The secretary called the Pueblo County Medical Society to order in regular session December 7, 1915. In the absence of President Taylor, Dr. Bon. O. Adams was elected president pro tem. The minutes of the previous meeting were read and approved.

Dr. Wallace presented to the Society a clinical case of traumatic rupture of the lens, and demonstrated the absorption of the lens that was taking place.

Mr. Chas. O'Donnell made an explanatory address to the society on the Workmen's Compensation Act. The paper of the evening was presented by Dr. Ray Taylor on "The Heart in Acute Infections." He took up the various inflammations of the heart, dwelling especially on myocarditis and

the generalized infections of the heart. The paper was excellent and up to date.

The application of Dr. Joe N. Snedec was read and referred to the membership committee.

J. H. WOODBRIDGE,
Secretary.

President Taylor called the society to order in regular session December 21, 1915. The paper of the evening was presented by Dr. Philip Work on "Polyneuritis Psychoses." The doctor dwelt particularly on the arsenical type.

The secretary made a report of the financial affairs of the society.

Dr. H. T. Low's application for membership was read and the secretary was instructed to inform Dr. Low that since he had at one time been a member of the society he would be reinstated upon payment of the reinstatement fee. Dr. Snedec's application for membership was reported on favorably.

A communication from Dr. F. M. Somers regarding advertisement cards in his newspaper was read to the society, and the secretary was instructed to inform him as to the ruling of the society at one of its previous meetings.

J. H. WOODBRIDGE,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

At the regular meeting of the society on December 18th Dr. W. H. Crisp presided.

Dr. Edward Jackson presented a patient showing staining of the inner surface of the lower lid of the left eye with polypoid granulations on the lid margins near the outer canthus. The patient had been using a clear solution of a silver salt about a year for chronic inflammation.

Dr. Melville Black presented a man with a macular burn from gazing at the sun, causing a relative central scotoma to the extent of disqualifying him for army service.

Dr. Black also presented two cases of retinitis proliferans. Dr. W. C. Bane showed a patient from the lower part of the fundus of whose eye he had removed a piece of steel last July. The patient now had perfect vision.

Dr. Otis Orendorff, Cañon City, reported an interesting case of eye injury from steel.

Dr. F. E. Wallace of Pueblo reported a rare case of tumor of the anterior chamber of a baby's eye.

Fuller reports of all cases presented may be read in the Ophthalmic Record or the Annals of Ophthalmology.

There were 24 members and 4 visitors present.

E. T. BOYD,
Secretary.

SOILY TUBERCULOSIS SOCIETY.

December 9, 1915.

The regular meeting of the **Solly Tuberculosis Society** was held at the El Paso Club, November 30th, at 12:30 p. m. At this meeting it was decided to hold the regular meetings hereafter once every two months, beginning with October and ending with the April meeting, and that the time of meeting should be 12:00 o'clock noon instead of 12:30 p. m., as heretofore.

A committee consisting of Drs. Forster and Trossbach was appointed to draw up resolutions regarding the death of Dr. E. L. Trudeau.

Dr. C. F. Gardiner then read a paper on "Heliotherapy in Tuberculosis", which was discussed from a medical standpoint by Dr. G. B. Webb,

with special reference to laryngeal tuberculosis by Dr. A. M. Forster and Dr. A. C. Magruder; from a surgical standpoint by Dr. D. P. Mayhew; and also by Dr. Schaefer.

H. TROSSBACH,
Secretary-Treasurer.

Book Reviews

The Popes and Science, The history of the Papal relations to science by James J. Walsh, M.D., Ph.D., Litt.D., Sc.D. (Nôtre Dame), K.C. St.G., Professor of Physiological Psychology, Cathedral College, New York. Fordham University Press. 110 West 74th Street, N. Y. Price, \$2.00 net.

The common helief that the Popes and the Catholic Church have been opposed to the development of Science, Walsh in this book has undertaken to disprove. We now have the other side of the story. With a fair attitude of mind, this deep student of medical history presents facts, ordered with logic and force, and "anyone who now maintains the thesis of Papal opposition to science will find his hands full if he attempts to answer this book."

As a student, Professor Walsh states that he had listened to teachers and professional friends until finally, much against his will, he came to believe that there had been issued many Papal documents which intentionally or otherwise hampered the progress of science.

That those who have written on this subject have not gone to the original documents he has proven, and he convicts his opponents of hasty generalizing, if not of anticlerical zeal. These Papal documents so often quoted as having a bearing on the subject are seldom seen entire, and have not been readily available in the English-speaking countries. In the appendix to his work appear these documents, a perusal of which fails to reveal any trace of Papal opposition.

The supposed Papal prohibition of dissection is founded, for the most part, on a Papal decree issued in the year 1300 by Pope Boniface VIII, which "forbade the mutilation of the human body and consequently hampered all possibility of progress in anatomy for several centuries", until the early half of the sixteenth when, with what is known as the Protestant Reformation, the "Golden Age of Modern Anatomy" set in (White). Those who have cited this document so confidently as forbidding anatomy have never given the full text of the document. It has nothing at all to say with regard to dissection, or of cutting up the body for teaching purposes. It concerns burials and forbids the cutting up of dead bodies and boiling them to separate the flesh from the bones, in order to carry them to distant parts for burial. This was a custom during the crusades and was done that those dying in infidel countries might be transported for burial in their own lands. By perversion of its significance it came to be connected with a supposed prohibition of dissection. As a matter of fact, the year 1300 is almost exactly the date for which we have the first definite evidence of the making of dissections and the gradual development of anatomical investigation in connection with the Italian universities. After this, evidence of dissection accumulates rapidly, and Walsh gives abundant proof of its further development.

The book deals with the supposed papal prohibition of chemistry; the church and surgery during the middle ages; the papal medical schools;

the foundation of the city hospitals; the papal physicians. And so Walsh goes on to prove that "there was no bull against anatomy or dissection, no bull against chemistry"; that the popes were the patrons of the great medical scientists and surgeons; that the papal medical school was one of the best in the world, and was sedulously fostered; and that the great scientists of the middle ages were clergymen and many of them after death were declared saints by the church.

C. B. I.

A Mechanistic View of War and Peace. By George W. Crile, M.D. 12mo., 104 pages, illustrated. New York: The MacMillan Company, 1915. Price, \$1.25.

A philosophy of war and peace seems at first glance outside the domain of medical literature. But the reader acquainted with Dr. Crile's professional writings will find in this volume much that is familiar. It is one that will be far more interesting to the reader who has watched the latest developments in modern medicine than it can be to any one else. No one else could see much in the one-third of its illustrations which are reproductions of photomicrographs showing the histologic changes produced in various organs by extreme exhaustion or emotion. From his vantage ground as head of a hospital unit in France, Dr. Crile has looked at war as an enormous human vivisection, compared to which all the experiments of the laboratories shrink into insignificance.

Perhaps the greatest good that may come out of this terrible evil may be through a calm, conscientious, scientific study of it. The aim stated in the introduction, "to make an analysis of war", and "to suggest means by which the very forces which have made cycles of war inevitable may be utilized for the evolution of longer and more secure cycles of peace", is surely a worthy one.

This is a book that the reader with a medical education can highly appreciate; and the busy doctor who lets it lead him away from his more immediate personal problems and perplexities will find himself refreshed and broadened by his excursion.

E. J.

International Clinics. Volume IV, Twenty-fifth Series.

This volume is the twenty-fifth anniversary number of the Clinics and contains many reviews of progress in various lines; Grinker in Neurology, Ballantyne in Obstetrics and Gynecology, and Crile in General Surgery. The surgical clinic of Dr. Crile at the Lakeside Hospital in Cleveland is very interestingly described. Chas. H. Mayo has an excellent article on Hydrocephalus, Spina Bifida and Allied Diseases, while the Alvarenga Prize Essay on the Surgery of the Pancreas by J. E. Sweet is a masterpiece in its completeness and conclusions. Under Diagnosis and Treatment, James T. Case thoroughly describes the Roentgenology of Gall-stones, and Brink discusses the Treatment of Internal Tuberculosis by Means of Absorbed Light-energy. Auto-intoxication by James J. Walsh is easy reading and of common sense. Hookworm Disease is well described by Deaderick and is well worth reading. R. G. P.

An Introduction to Bacteriology for Nurses. By Harry W. Casey, A.B., M.D. Former Assistant Bacteriologist, Bender Hygienic Laboratory, Albany, N. Y.; Associate in Medicine, Samaritan Hospital, and City Bacteriologist, Troy, N. Y. Illustrated; 139 pages. Published by F. A. Davis Company, Philadelphia, Pa. Cloth, \$1 net. The author treats this rather difficult subject

in a very practical and pleasing manner. Beginning with a short history of bacteriology, he follows with the classification, morphology, biology and distribution. Then before entering upon the study of the different bacteria, he gives a chapter to sterilization and disinfection, with the mode for their destruction. When describing the varieties of pathogenic bacteria, the author gives the information best suited to the nurse's use.

The book includes a brief description of the different fungi and protozoa which cause disease, besides the different diseases caused by unknown microorganisms. The author devotes one chapter to the bacteria in milk and water and one to the technique of preparation and collection of material for bacteriological examination. There is a glossary at the end of the book. It is a brief, interesting and useful book for nurses. M. R. S.

Fraudulent Substitutes for Specifics. Several shipments of worthless imitation drug products have been seized by the officials in charge of the enforcement of the Food and Drugs Act. Itinerant peddlers are selling to drug stores large quantities of preparations made up and labeled in imitation of high-priced patent medicines of foreign origin. Only small quantities of the genuine medicines have been imported since the war began, causing a great increase in prices. Unscrupulous manufacturers are attempting to reap a harvest by substituting for the genuine medicines cheap chemicals with no medicinal value whatever. In order to make it difficult to trace these preparations to the parties responsible for their manufacture, they are usually peddled about to drug stores by itinerants who make immediate delivery at the time of sale.

Fraudulent Imitation of Neosalvarsan. A preparation put up in imitation of neosalvarsan is being peddled to drug stores. A sample labeled "Neosalvarsan", which was recently examined by the United States Department of Agriculture, was found to be nothing more than salt solution, colored with a coal tar dye, none of the genuine neosalvarsan whatever being present. The label on this product was an exact reproduction of the genuine imported neosalvarsan, or the container was an original container refilled with the imitation article. This fraud is held to be particularly flagrant, not alone because a worthless preparation is sold for a high price, but mainly because neosalvarsan is usually administered by injection directly into the blood of the syphilitic patient. The cheap substitute is not only worthless in the treatment of this disease, but when injected directly into the blood might work considerable injury.

The Dog as Disease Carrier.—The United States Department of Agriculture calls attention to the part played by the dog in carrying diseases either to animals or human beings. Foot and mouth disease is readily carried from one farm to another in the dirt which the dog picks up on his feet. Rabies, hydatid, ringworm, favus, double-pored tapeworm, round-worm, and tongue-worm are often conveyed to human beings and it occasionally happens that the dog helps fleas and ticks in transmitting bubonic plague or spotted fever. The viscera of animals should be boiled before being fed to dogs. Owners should keep their dogs clean, not merely for the comfort and happiness of the dogs, but to prevent them from becoming the carriers of disagreeable and dangerous vermin.

THE COLORADO STATE MEDICAL SOCIETY.

(Incorporated November 1, 1888.)

The Next Meeting Will Be Held in Glenwood Springs,—September 5, 6 and 7, 1916.

OFFICERS, 1915-1916.

President, John R. Espey, Trinidad.

Vice Presidents, 1st, C. E. Tennant, Denver; 2nd, J. U. Sickenberger, Grand Junction; 3rd, W. A. Kickland, Fort Collins; 4th, H. W. Averill, Evans.

Secretary, Crum Epler, Pope Block, Pueblo.

Treasurer, W. A. Sedwick, Metropolitan Building, Denver.

BOARD OF COUNCILLORS.

Term Expires, 1916—A. G. Taylor, Grand Junction; J. C. Chipman, Sterling; 1917—Horace G. Wetherill, Denver; A. R. Pollock, Monte Vista. 1918—J. W. Ames, Denver; E. A. Elder, Pueblo. 1919—J. A. Matlack, Longmont; Edgar Hadley, Telluride. 1920—Will H. Swan, Colorado Springs; H. S. Henderson, Grand Junction.

DELEGATES TO AMERICAN MEDICAL ASS'N.

Term Expires, 1916—H. R. McGraw, Denver; Alternate, F. R. Spencer, Boulder. 1917—L. H. McKinnie, Colorado Springs; Alternate, George A. Moleen, Denver.

COMMITTEES FOR 1915-16.

Scientific Work, H. A. Black, Pueblo; W. A. Jayne, Denver; Crum Epler, Pueblo; W. H. Crisp, Denver.

Credentials, Crum Epler, Pueblo; W. H. Halley, Rouse; George A. Moleen, Denver.

Public Policy and Legislation, W. H. Sharpley, Denver; Geo. B. Packard, Denver; J. W. Ames, Denver; D. A. Strickler, Denver; C. F. Wilkin, Laporte; L. H. McKinnie, Colorado Springs; Fred Schermerhorn, Montrose.

Publication, A. J. Markley, Denver, Chairman (1916); L. B. Lockard, Denver (1917); Melville Black, Denver (1918).

Auditing, O. M. Gilbert, Boulder; H. A. Garwood, Denver; E. L. Rupert, Florence.

Necrology, C. A. Ringle, Greeley; J. B. Davis, Denver; H. Goodloe, Canon City.

Medical Education, Frost C. Buchtel (1916); Will H. Swan, Colorado Springs (1917); George H. Cattermole, Boulder (1918).

Health and Public Instruction, R. W. Corwin, Pueblo; W. T. Little, Canon City; H. A. Smith, Delta.

Committee to Cooperate with State Pharmacal Association, C. E. Edson, Denver; J. C. Chipman, Sterling; E. D. Burkhard, Delagua.

Committee of Arrangements for 1916 Meeting, W. W. Crook, W. W. Frank, and J. P. Riddile, Glenwood Springs.

Committee to Revise By-Laws, W. A. Jayne, Denver; L. H. McKinnie, Colorado Springs; H. A. Black, Pueblo.

Workmen's Compensation Acts, H. R. McGraw, Denver; S. D. Van Meter, Denver; D. P. Mayhew, Colorado Springs.

First Aid, Aubrey H. Williams, Denver; F. H. McNaught, Denver; C. B. Lyman, Denver.

Study and Control of Cancer, T. A. Stoddard, Pueblo; J. G. Hughes, Greeley; T. M. Burns, Denver.

Medical Defense, H. G. Wetherill, Denver; M. J. Keeney, Pueblo; Crum Epler, Pueblo.

Constituent Societies and Times of Meeting and Secretaries.

Bent County, first Tuesday of each month; P. A. Leedham, Las Animas.

Boulder County, every Thursday; C. L. La Rue, Boulder.

Crowley County, second Tuesday of each month; E. O. McCleary, Ordway.

Delta County, last Friday of each month; W. Scott Cleland, Delta.

Denver County, first and third Tuesday of each month; H. R. Stilwell, Denver.

El Paso County, second Wednesday of each month; G. B. Gilmore, Colorado City.

Fremont County, fourth Monday of January, March, May, July, September and November; R. C. Adkinson, Florence.

Garfield County, second Thursday of each month; W. W. Frank, Glenwood Springs.

Huerfano County, P. G. Mathews, Walsenburg.

Lake County, first and third Thursday of each month; E. A. Whitmore, Leadville.

Larimer County, first Wednesday of each month; E. Stuver, Fort Collins.

Las Animas County, first Friday of each month; C. W. Presnall, Trinidad.

Mesa County, first Tuesday of each month; R. B. Harrington, Grand Junction.

Montrose County, first Thursday of each month; S. H. Bell, Montrose.

Morgan County, E. E. Evans, Fort Morgan.

Northeast Colorado; N. Eugenia Barney, Sterling.

Otero County, second Tuesday of each month; R. S. Johnson, La Junta.

Prowers County, first Tuesday of each quarter, F. Milton Friend, Lamar.

Pueblo County, first and third Tuesday of each month; J. H. Woodbridge, Pueblo.

Routt County; H. C. Dodge, Steamboat Springs.

San Juan County; F. W. E. Henkle, Silverton.

San Luis Valley; L. L. Herriman, Alamosa.

Teller County; Thos. A. McIntyre, Cripple Creek.

Tri-County; C. W. Merrill, Burlington.

Weld County, first Monday of each month; J. W. Lehan, Greeley.

Smoking and the Circulation. Aikman (New York Medical Journal, vol. 102, p. 891) made experiments to determine the effect on the circulation of smoking but one cigarette. As regards the pulse, 16 out of 27 subjects showed an increase of over eight beats a minute. In some cases the rise was spectacular and came on in one or two minutes or almost as soon as the pulse was taken. All of the twenty-seven cases gave an increase except four, and two of the four had an abnormally high pulse at the start. The effect on the blood pressure was not at all uniform. Out of twenty-five cases the systolic pressure fell in twelve, rose in five, and was unaltered in eight. The cigarette habit did not give tolerance for cigarette smoking so far as the circulation was concerned. Four heavy smokers, aged 20, 16, 18, and 20 years respectively, showed an increase of over twenty beats a minute after one cigarette.

Sterilization of Dental Instruments.—Thorough studies of sterilization processes used or usable by dentists have recently been made by the United States Public Health Service, and detailed information on the subject is given in a recent publication by that service.

Holstein Cows' Milk In Tuberculosis Cases

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AN ANNOUNCEMENT

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THE 1916 PROGRAM.

THE SCIENTIFIC COMMITTEE OF THE COLORADO STATE MEDICAL SOCIETY DESIRES TO REMIND ALL MEMBERS OF THE NEXT ANNUAL MEETING, TO BE HELD AT GLENWOOD SPRINGS, SEPTEMBER 5TH, 6TH, AND 7TH, 1916; AND TO NOTIFY THOSE WHO DESIRE TO READ PAPERS TO SEND THEIR NAMES AND THE TITLES OF THEIR PAPERS TO THE SECRETARY BEFORE APRIL 15TH. ABSTRACTS OF PAPERS TO BE READ MUST BE RECEIVED BY THE SECRETARY NOT LATER THAN JUNE 1ST. THE NAMES OF APPLICANTS FOR PLACES ON THE PROGRAM WILL BE FILED IN THE ORDER IN WHICH THEY ARE RECEIVED, AND THOSE FURNISHING THEIR TITLES AND ABSTRACTS WITHIN THE PROPER TIME WILL BE GIVEN PLACES UNTIL THE LIST IS FILLED.

Editorial Comment

BACK TO THE FARM AS A THERAPEUTIC MEASURE.

The care of the unfit is a serious problem for society, and will probably continue to be so until the eugenists by regulating marriage and by sterilizing imbeciles and defectives have purged the race of its evil strains. Any departure which will lessen this burden on the state and at the same time alleviate the unfortunate condition of its wards is to be welcomed.

The January number of "The Survey"

contains an article by Winthrop D. Lane, describing how the state of Indiana has attacked this problem. Under the supervision of an unusually efficient and high-minded board of state charities, Indiana has established farm communities for epileptics, for the insane and for certain classes of criminals, and a similar community for the feeble-minded is about to be started. At present only men can be accommodated at these farm institutions, but eventually similar ones will be established for women.

This method of dealing with epileptics is not new. Germany began it in 1867 and now has fifty such institutions. Ohio was the first of our states to adopt it and New York the second. There are now fifteen states caring for epileptics in this way.

The farm village for epileptics in Indiana is forty-five miles from Indianapolis and comprises 1,246 acres. Two hundred and thirty men and boys are now living in this village, but when the land is fully improved there will be room for 1,200. The buildings are arranged in groups, and instead of having the patients crowded together in one building or one group of buildings they are divided among the different groups so that they will get along well and work well together. Each group is under the charge of a man and his wife who are state employes, and has its own kitchen, garden, orchard, horses, pigs, chickens, etc.

The buildings are one and two stories high, of rough red brick, similar to the bungalow. Living rooms with books, papers, magazines, phonographs, etc., are provided. The other farm colonies, for the insane and for those who have come into conflict with the law, are modelled on the same general plan.

Of course, in all these institutions the inmates have to be carefully selected. The dangerous epileptic, the violently insane and the hardened criminal have no place here. In the epileptic colony there are many unfortunates formerly a burden to themselves and the community who are now leading useful and comparatively happy lives. This applies particularly to the ones who only have their attacks at night.

The two features which recommend this method of dealing with these people are that it improves the individual by making him more comfortable and happy and that it relieves the community of some expense by making him partially self-supporting. We must not let ourselves be misled by magazine enthusiasm into the idea that this "back to the farm" treatment is going to work any wonderful cures. The title of the article in "The Survey" is misleading in this respect. It is "In the Healing Lap of Mother Earth"—"Like Antaeus of old, the sick in mind and spirit grow strong from their free life in the fields of Indiana's farm colonies."

Epilepsy is too fundamental a dyscrasia to be cured by hygiene and diet and open air. The most these can do is to lessen the number and severity of the attacks. As to the insane, farm life will probably hasten the cure in the convalescent but it will have little or no effect on the chronic insane, the imbeciles and the defectives of various kinds.

In dealing with the latter the best hope seems to lie in preventing their being brought from Europe and preventing their reproducing.

C. L. P.

BUYING AND SELLING PATIENTS.

The problem involved in putting a stop to the undesirable practice of division of fees without the patient's knowledge is easier to solve in theory than in reality. In various states successful or unsuccessful attempts are being made to enact laws dealing with the subject. A fair proportion of these statutes are likely to remain dead letters. A bill just introduced into the Kentucky Senate and House of Representatives may be among this number, but it is at least

distinguished by a frankness of language which goes right to the heart of the evil which it is intended to counteract. The proposed act is entitled "An act to prohibit the buying and selling of patients by physicians or surgeons or other persons, and to define what shall constitute the buying and selling of patients", etc. The first section provides "that any physician, surgeon or any other person who carries, sends or who is in any manner instrumental in causing a patient to go to another physician or surgeon for surgical operation or advice as to, or treatment of, any physical or mental disease, injury or ailment and receives therefor from such other physician or surgeon any money, gift, or other thing of value for such patient or who has any agreement or understanding with such physician or surgeon to receive therefor any money, gift or other thing of value whatsoever from such physician or surgeon without the knowledge and consent of the patient, shall be guilty of selling the patient within the meaning of this act". The second section carries a similar provision with regard to any one receiving patients under these conditions. A first offense is punishable with a fine of from \$50.00 to \$100.00, and a second offense is punishable by forfeiture of license to practice medicine in Kentucky. Furthermore it is provided that a license so cancelled cannot be renewed in that state.

LIFE EXTENSION.

We in Colorado are particularly familiar with the fact that many lives are lost every year because the disease from which the patient has suffered was not diagnosed at a sufficiently early date. A large proportion of those who are sent to this climate on account of pulmonary tuberculosis have discovered the truth too late to prevent a speedy fatal outcome, and many others are so seriously affected that they will drag on the remaining years of their life in a condition of more or less chronic invalidism. Physicians are sometimes to blame for this condition of affairs, but of course in a great proportion of cases the patient did not consult a doctor until the malady was far advanced.

What is true in this respect of tuberculosis is perhaps even more true of some diseases to whose prevention we have so far given comparatively little heed. We think of the general mortality in this and other countries as showing a steady decrease year by year; and yet, in certain important directions, the mortality in the United States is increasing very decidedly. "No one questions" says Fisk (New York Medical Journal, volume 103, page 97) "the controllability of the death rate from communicable diseases, but only within the past few years has any protest been raised against premature death from chronic diseases of the vital organs". Some of the most valuable figures bearing on this subject are obtained from the statistics of insurance companies. Thus Dwight states that in his company 50 per cent of the rejections during 1912 were for circulatory conditions. Rittenhouse places at 40 per cent the proportion of risks declined on account of circulatory and kidney affections during a year in one large company. Thus we are driven to the conclusion that very many people who believe their health to be perfect are really seriously impaired, while an even larger number are affected by conditions which would lead to premature decay.

The experience of several of the leading insurance companies shows that during the past thirty years there has been a fall in the death rate of about 30 per cent among policy holders under thirty years of age, and an increase of from 15 to 34 per cent in the mortality among elderly persons. It is a serious commentary on some features of American life, that the experience of sixty-three British insurance companies shows an improvement of 7 per cent as regards the mortality among policy holders over sixty years of age. These figures agree with the tendency of mortality statistics as regards the general population in Great Britain. The increased mortality in this country is of course principally due to diseases of the heart, blood vessels, and kidneys.

The causes of these degenerative dangers begin to be active many years before the results are apparent. Fisk is director of hygiene of the Life Extension Institute of

New York, an organization which is doing useful work in investigating and calling attention to the causes of the chronic diseases, and the possibility of preventing or curing them, or at least of deferring their fatal results by early medical treatment and guidance. The institute is probably backed by large insurance companies, since at this point the selfish interests of these companies coincide with the public welfare. The matter must sooner or later be taken up by public health departments all over the country, and the New York State Department of Health has already undertaken an educational campaign against the chronic diseases of adult life.

Fisk emphasizes the important truth that measurement of the blood pressure is by no means always a satisfactory guide as to early changes in the cardio-vascular system. A considerable degree of thickening of the arteries may exist without alteration in blood pressure. In a large series of patients examined, only 12.5 per cent of those showing marked thickening had blood pressures 15 mm. Hg. above the average for the age. Low blood pressure was often found with marked thickening, and a very slight degree of thickening in cases with fairly high pressure.

Fisk thinks that too little attention is paid to careful palpation of the radial artery. He reminds us that "it is easier to write a prescription than to study a human life. If it is not possible to write a prescription, the impulse is to slap the patient on the back and tell him to forget it."

He summarizes the general lines of prevention as follows: (1) Eugenics; (2) Periodical examination to detect physical impairment, especially foci of infection, and also errors in living habits, or faults in heredity which suggest important modifications of occupation or living habits; (3) The application of the principles of personal hygiene.

MEDICAL DEFENSE.

At the last annual meeting of the Colorado State Medical Society, the House of Delegates adopted a recommendation of the

special committee dealing with the matter to the effect that the question of co-operative medical defense for Colorado should be decided by a postal card vote of the Society. The report of the committee (Colorado Medicine, 1915, page 342) summarizes the experience of other societies in undertaking to insure their members against civil malpractice. The question is not an easy one to decide, and is complicated by the fact that many physicians are already insured in regular defense companies which not only defend their clients in the courts but also indemnify them against adverse judgments. This a state medical society of such relatively limited membership as our own could not very well afford to do.

It may not be uninteresting to record some of the provisions of a scheme of co-operative medical defense which will apparently go into effect in Ohio within the next month or two. The Association will not pay expenses for serving subpoenas nor the expense of witnesses residing within the county, nor will it pay judgments or fines awarded or imposed by the jury or court. To be entitled to defense a member must be at all times in good standing in his county society, that is he must pay his dues on or before January 1st of each year. The Association will not defend a suit in any case of fracture or like injury where an X-ray plate was not taken and kept on file, unless it can be shown that at the time and place it was impossible to secure an X-ray plate.

THE PHYSICIAN IN COURT.

Among the accidents to which every medical man is liable is that of being called upon to testify in a court of law. The figure cut by a physician on the witness stand varies with his mental makeup. Those whose mental balance is most perfect usually make the best witnesses. The general principles which should be borne in mind by any one, physician or otherwise, who is called upon to face an attorney in these circumstances are so well expressed in the following quotation from an address by J. W. Courtney (Boston Medical and Surgical Journal, volume 174, page 1) that

no apology is needed for its reproduction:

"The first thing the waiting medical witness should be wise enough to do, is to take his tone from that of the court. Upon the stand the witness' manner should never be flippant, nor should it bear the stamp of spurious ease. His answers to counsel should be rigidly responsive, and he should never volunteer a statement when no question is before him. He should have prominently in mind the fact that directly he steps upon the stand he is a servant of the commonwealth. This does not mean, however, that he is in any sense an advocate: quite the contrary. Therefore, he should always refrain from arguments with counsel. He will find it difficult, very difficult, at times to give the desired 'yes' or 'no' answer, but it is always better to try to do so. Witness will lose nothing by so doing, because both the court and his own counsel will see to it that he has later an opportunity to amplify his statement to his entire satisfaction. His language should represent an effort to meet with the understanding of the twelve men who will ultimately decide the case. He should not keep one eye on his own counsel and the other on his cross-examiner. His whole attention should be directed toward the jury. He should not constantly appeal to the court when crowded by legitimate cross-questioning, and above all things, he should never allow his voice to sink to an inaudible murmur".

The Fight Against Tuberculosis in Michigan. The Michigan legislature of 1915 placed \$100,000 at the disposal of the State Board of Health to be used in the restriction of tuberculosis in the state. The Michigan State Medical Society has taken a new step in the fight against tuberculosis. At the request of a committee from the state society, the Governor of Michigan issued a proclamation stating that on August 20th each member of the medical society would examine without charge anyone who presented himself. Blanks were supplied to the physicians, and a large number of examinations were reported. The campaign by the state board of health is in charge of a competent medical man who will have the direction of as many visiting nurses as may be needed. The county will be taken as the unit of the survey. Michigan has already a death rate from tuberculosis lower than that in any other state in the Union except Utah.

Original Articles

THE ETIOLOGY, PATHOLOGY AND THERAPY OF HODGKIN'S DISEASE AND ALLIED AFFECTIONS.*†

J. L. YATES, M.D., MILWAUKEE, WIS.

Clinical, pathological and experimental studies made during the past seven years have led to a working hypothesis that will serve as a tentative definition of a group of closely related affections, of which Hodgkin's disease may be taken as the most characteristic example; a nonecommunicable infectious granulomatous process due to the B. Hodgkini (or to similar but as yet undifferentiated microorganisms), protean in the resultant local (tissue) and general reactions and therefore in clinical manifestations. In this category, the reasons for which will develop later, have been placed leukemia, more certainly the lymphogenous and barely possibly the myelogenous, pseudo leukemia, chloroma, mycosis fungoides, Banti's disease, some forms of lymphosarcoma, certain arthritides and a type of recurrent elephantiasis-like cellulitis. So far as can be determined none of these diseases has ever progressed to the point of certain diagnosis that has been known to undergo spontaneous resolution.

Observations made throughout the world at various times since the development of modern pathology have repeatedly suggested a common cause for most of these diseases and indicated their possible identity. Little will be presented, however radical it may first appear, that has not already been advanced by accepted authorities save the claim that the etiological factor has apparently been discovered and that a more satisfactory method of treatment is thereby made possible.

The following necessarily brief summary

of the combined observations of a group of coördinated workers can only give the most significant points that are believed to have been established, without any attempt to present substantiating evidence in detail.

From a clinical viewpoint this infectious process is characterized by fairly constant features, not always equally well developed and usually to some extent obscured by chronicity. The progress of the disease is not steady, but marked by alternating periods of aggression and remission. In the earlier stages and in the more chronic processes the periods of remission are longer, indeed so long as to raise hopes of recovery in some instances, and the aggressive phases so slight and so brief as to be attributed to other causes if noted at all. Later in the course of the disease or in the more acute forms the aggressive phases become dominant and may mask the recessive periods so completely that they can escape even fairly careful observation. Three quite distinct stages are usually to be recognized and to them Trousseau's classification based upon his observations in 1870 are today equally applicable. The first or latent stage is marked by a gradually developing lassitude with periods of malaise, usually afebrile, and a slight anemia. The second or progressive stage may supervene gradually upon the first or occur suddenly, explosively as Trousseau aptly described it. Now the dissemination or intensification of the process is unmistakable, the lassitude amounts to distinct disability, the periods of malaise are pronounced, frequently with a low fever, and there is evident anemia. A third or cachectic stage, unfortunately often too prolonged, is marked by emaciation, extreme anemia and great physical and physiological disability, and is almost constantly febrile. All forms have been universally fatal unless properly treated, and in Banti's disease alone has ultimate recovery been accepted.

Bunting's work as a basis of explanation of these phenomena is most important and his observations have been so satisfactorily controlled that confirmation must follow when his methods are adopted.

The anemia is of a secondary type, but may approach the primary form in extreme

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cases and is the result of a hemolytic action of the toxine. This toxine, in fact the organisms themselves, have an affinity for lymphoid tissue, wherein the lymphoblastic and endothelioid cells are particularly affected and fibroblastic proliferation commonly induced. Similarly the megalokaryocytes of the bone marrow are irritated and the eosinophilic and neutrophilic leucoblasts directly or indirectly involved. Thus there develops a blood picture which is characteristic not only for the typical and some at least of the atypical forms of Hodgkin's disease, but also for its stages, and its final disappearance is, we believe, the only index of complete recovery. Sufficient data have not yet been accumulated to warrant more than a presumptive speculation as to the variations in tissue response to this toxic irritation. However, it may develop that at one extreme excessive lymphoblastic response may determine a lymphatic leukemia or pseudo-leukemia, at the other extreme an endotheliomatous hyperplasia simulating a neoplasm may result from a selective action upon the endothelioid cells. In the middle ground would stand Hodgkin's disease proper, in which all the cells mentioned respond to the irritation. The nature and extent of this response determine according to this conception, not only the acuteness of the process, and its stages, but also the clinical picture.

Pathologically there is definite confirmation for the foregoing assumptions. In Hodgkin's disease there are four quite distinct types of lesion, stages in the development from the earliest to the latest or possibly from the most acute to the most chronic.

The first has been described clinically by Benda, Chiari and Bunting and has been reproduced experimentally in our work. The other three are well established. Atypical lesions are remarkably numerous, and since apparently they may develop as the result of favorable therapy it is fair to assume that they may be the result in part of variations in virulence and resistance. These histological variations from the usual lesions may be so great as to render a positive micro-

scopic diagnosis in our present state of ignorance, uncertain or even impossible. An unmistakable if temporary metamorphosis of a typical Hodgkin's disease blood count to that of lymphatic leukemia in a patient whose necropsy established a diagnosis of Hodgkin's disease is significant in this connection, and is also indicative of the close relationship of these processes. Sarcomatous degeneration has been described, notably by Karsner. Our observations in this particular have been limited, but such evidence as has accumulated, clinical pathological and experimental, is against this view unless our conception of the distinction between the dissemination of a granulomatous process and a neoplasm is erroneous. Evidently if our observations are correct, Mallory's assumption that these diseases are tumors is untenable.

Since Bunting obtained the B. Hodgkini in February, 1912, he has been able to cultivate it from all fresh affected tissue wherein the histological diagnosis was positive or when the blood picture of the patient was characteristic, unless that tissue had been contaminated or had been recently actively treated by the X-ray. In his absence, cultures made from a gland excised from a patient who recently had been given immune serum remained sterile.

He has recovered it in pure culture five times from one individual at various intervals extending over three and a half years, three times from another and twice from two others. Recently one of our earliest patients from whom a mass of cervical glands had been removed eight years previously, suffered a relapse and the organism was obtained from an axillary enlargement. Other morbid tissues have been subjected to culture and dissimilar diphtheroid organisms have been recovered, but never when there was neither histological nor hematological evidence of their specific activity. An organism morphologically identical has been stained in situ in tissue showing the characteristic changes. This may be the only organism identified and in some acute cases may occur in profusion.

In the early attempts to reproduce the disease by inoculation of animals excessive

amounts were given and resulted in the development of atypical but still characteristic lesions of the early, or acute stages. Incidentally the peculiar affinity for lymphoid tissue was evidenced. More recently in conjunction with Dr. Kristjanson at the Milwaukee County Hospital the inoculation of dogs with small doses over many months has produced the chronic changes in the germinal centers in lymph glands and in the spleen identical with those occurring in Hodgkin's disease and Banti's disease respectively. Moreover these experimental animals and one normal man who was given a polyvalent vaccine prepared from similar organisms all developed the characteristic blood changes, the man reverting to normal after the vaccination was discontinued. None of these effects have as yet been obtained by the use of other organisms, though observations in this particular are as yet incomplete.

Much has been stated about the great numbers and wide distribution of diphtheroid organisms, all of which is granted. The strains that we hold to be of etiological significance are possessed of a distinct cultural individuality, with their reluctant growth restricted to few media. They appear to have slight variations physically and culturally which have as yet been incompletely determined, but they have been tentatively grouped, and as these groups correspond to some extent with the lesions from which they were obtained, it is assumed that there is some variation in the toxins produced.

Olitzky observed that the organisms which he had obtained gave positive results in complement fixation tests with the sera of immunized animals but not with the serum of patients suffering from the disease. Sera obtained from patients under our friends' care as well as our own were submitted to Dr. Kristjanson, who tested them with antigens prepared by Prof. McJunkin of Marquette University and by Prof. Clark of the University of Wisconsin. Apparently a positive reaction resulted only when a patient was at or just beyond the height of an aggressive phase of the disease. The sera from animals under inoculation all gave positive results.

The serum from a fairly highly immunized horse, with normal horse sera as controls, showed that a specific agglutinin was resident in the immune serum, since other types of organisms were not affected. No bactericidal or bacteriolytic powers were demonstrable.

From what has been stated or implied there is some justification for the assumption that the B. Hodgkini or closely related organisms provoke a series of reactions that have common clinical manifestations, positive and negative phases, three well marked stages, peculiar tissue and blood changes and a fatal termination. Variations in the clinical picture are held to be attributable in part to differences in the toxins of the several strains of organisms thus far secured, and in part to differences in the native resistance of infected individuals and the method of infection.

Owing to these considerable variations in the histological and hematological reactions and the differences in the strains of diphtheroids whose etiological relationship remains to be determined incontrovertibly, we believe no diagnosis is positive until at least two of these three diagnostic factors (hematological, histological and bacteriological) are positively established. It must be remembered that tuberculous adenitis may imitate this disease so accurately as to be indistinguishable clinically, that rarely a diphtheroid infection may be added to a tuberculous, though the reverse of this sequence is perhaps more common.

Treatment has been based upon the hypothesis that there is a portal of entry for the infection, with subsequent dissemination by direct extension, and lymphogenous or hematogenous bacterial metastases. Protective reactions are seldom if ever adequate to overcome the disease. Therefore it is attempted when possible and feasible to locate and to remove the portal of entry, commonly the tonsils, to excise when indicated and as completely as possible all of the approachable affected tissue in order to place the balance of power rapidly and materially on the side of the individual, and then to follow with X-ray exposures, hygienic measures

and the intravenous administration of immune serum.

This after-treatment must be continued relentlessly for years if ultimate cure is to be obtained. The blood picture has been the surest means of estimating the individual's condition and gives the earliest warning of an impending recrudescence which occasionally can be averted.

A study of our experiences and a review of the literature have indicated that certain more or less generally accepted therapeutic measures are harmful or futile. Arsenic is of benefit solely as a tonic. The administration of salvarsan is of no lasting if any benefit. X-ray treatments must be given as an adjunct measure, since no cure due to this agency alone is on record. Drs. Baer and Foerster, who have done this part of the work, will publish the methods they have applied so successfully. Aside from burns, the progress of the disease may be affected unfavorably by ill advised Roentgenological treatment. Partial excisions are as indefensible as in cancer therapy and this applies equally to the removal of test glands. A probable diagnosis can be obtained from the clinical history, the blood picture, the reaction to tuberculin and physical examination. If radical treatment be indicated, a primary excision with frozen section diagnosis may immediately precede it. Otherwise there is nothing to be gained for the patient but a probably certain diagnosis at the risk of a grave dissemination of the process. The only justification for routine test gland excisions, the preparation of an autogenous vaccine, has been eliminated from our work.

Vaccine treatment, autogenous or polyvalent, subcutaneous or intravenous, intensive or extended in acute, chronic or convalescent cases has never produced per se any detectable improvement in individuals we have treated, indeed if the blood picture is the criterion we now believe it to be, actual harm has been done in some instances. Although the administration of Coley's mixed toxins preceded improvement in one case of the lymphosarcoma type, its routine administration has not seemed to be indi-

cated, though we still use it in suitable cases.

A brief outline of our results will serve to give some evidence in support of this working hypothesis and to indicate that there is reason to hope that a cure for some of these hopeless diseases is not purely an optimistic fantasy. A cure is considered established only when a patient has been without demonstrable evidence of the disease, including a normal blood picture, for five years.

Group I. Type, Hodgkin's Disease.

Probably sixty or more cases have been seen. Some were in a dying condition, others refused treatment, in a few palliation was attempted with some temporary relief, occasionally a prolongation of life under less trying conditions. In ten cases radical treatment was attempted. One child of 5 years succumbed to operation and three subsequently died of the disease. Four are living and in good condition from one to eight years since treatment began, one with excellent and the others with good prospects of ultimate recovery. Two very early cases are cured. Three of the ten cases have been given immune serum. In one the administration was discontinued on account of urticaria; in another both glands and spleen enlarged primarily, subsequently to recede almost to normal. A gland removed soon after the last dose of serum gave a pure culture of *B. Hodgkini*. The third developed a multiple glandular enlargement during the injections, which finally disappeared except in one cervical node. This was excised. Histologically it showed a very chronic type of lesion, and cultures from it remained sterile. Incidentally, there was in this instance an improvement in the blood picture.

Group II. Type, Lymphosarcoma.

Three cases have come under our care. One was given a course of vaccine (autogenous), refused farther treatment after a severe reaction from one dose of Coley's toxins, and has since died. One is greatly improved, particularly after two series of immune serum treatments. Benefit in this man followed a course of Coley's toxins

at a time when a fatality seemed inevitable, but intensive X-ray treatments were also given and were probably to some extent the cause of improvement. The present prognosis is good. In the third case the process apparently was still confined to one tonsil though a positive blood picture had developed. This individual is temporarily relieved, has a normal blood picture and should ultimately be cured.

Group III. Type, Lymphatic Leukemia, Pseudo-leukemia, Chloroma.

One case of chronic lymphatic leukemia in the late stage of the disease is undergoing his second course of immune serum injections. Curiously he was having a recurrence of an atypical remittent form of fever simulating the variety which Murchison first described as characteristic of Hodgkin's disease and which is improperly called Pel-Ebstein. In this case also the glandular enlargements increased after the first course of serum, subsequently to recede. One case of pseudoleukemia (identical with lymphatic leukemia save for an absence of lymphocytosis) was seen in terminal stages of the disease. A course of immune serum was without appreciable effect. Death occurred two weeks later. One case of chloroma was recognized. Treatment was refused; death ultimately occurred from nephritis. Marked permanent improvement followed three injections of an autogenous vaccine, but is attributable rather to a recessive phase that persisted until death.

Group IV. Type, Banti's Disease.

One case was seen at the Milwaukee County Hospital. Splenectomy was followed by recovery and a return to a normal blood picture. Cultures were positive, as they were from two of three other spleens sent to Dr. Bunting, the third remaining sterile. This lesion, we believe, has been reproduced experimentally in dogs by frequent intravenous inoculations extending over long periods. A progressive secondary anemia also developed.

Group V. Type, Chronic Hypertrophic Arthritis.

We have seen one case in which a diagnosis was made accidentally. Inguinal

glands were excised in an attempt to obtain a streptococcus for a vaccine, but from the glands B. Hodgkini grew in pure culture. This tissue was positive histologically and a characteristic blood picture was found to be present. Marked subjective improvement followed a course of immune serum when subcutaneous and intravenous administration of an autogenous vaccine had failed some months previously to have any appreciable effect.

This type of joint lesion developed in one monkey that was being inoculated subcutaneously. In one other subacute case recurrent attacks of acute arthritis occurred during periods of aggression. Death occurred before any chronic changes had developed.

Group VI. Type, Elephantiasis-like Cellulitis.

One case of an obscure nature that had been under observation for seven years was also diagnosed accidentally from tissue removed to obtain an autogenous vaccine. Typical organisms were present in pure culture and the blood picture was characteristic. Improvement in this patient was noted subsequent to intravenous autogenous vaccination. Infection is still present but in a comparatively avirulent form, and the prognosis is excellent.

Group VII. Type, Mycosis Fungoides.

The one case seen with Dr. Foerster was in an advanced stage, though still free from skin ulceration. One course of immune serum seemed to relieve an intense pruritus to some extent and was followed by a marked reduction in the induration and pigmentation of the skin but not of the numerous enlarged glands. Lesions in a skin nodule and in lymph glands were histologically positive, and from a lymph gland the organism was obtained in pure culture.

In all of the above cases the diagnosis has been established if our premises are correct, and from all but three the B. Hodgkini was obtained. Two of three were treated before this organism had been discovered and the third had no tissue excised from which to make cultures.

In conclusion, it may be stated that if it

is impossible to reproduce these lesions by the inoculation of organisms other than the B. Hodgkini, its etiological relationship will have been established. Granting that this may be the fact, the prospect for an efficacious curative serum is at least encouraging, but even if this be untrue, it has at least been demonstrated that Hodgkin's disease, contrary to the accepted belief in an inevitable fatality in less than five years, is curable when recognized early; and even when treated later, fairly normal health may be obtained for eight or more years.

DISCUSSION.

Charles A. Powers, Denver: I have been very much instructed by Dr. Yates' excellent paper. All of my cases of Hodgkin's disease have died. I should like very much to ask Dr. Yates what would be his management in the case of a man with a large retroperitoneal pelvic tumor, with the axillary glands of such size that he went around with his arms akimbo, with a neck about twice the diameter of his head, and with other symptoms in proportion? Such a case came under my care, and about all that I could do was to make the autopsy.

I have been exceedingly interested in and instructed by this contribution; it is the first ray of hope I have had held out to me in connection with Hodgkin's disease, and I hope that in his closing remarks Dr. Yates will kindly dilate further on the management of these baffling cases.

C. B. Van Zant, Denver: I should like to ask Dr. Yates if his investigations indicate that this disease is largely confined to young life as we have been told in the text books, or if it is not more common in middle life than we had supposed?

John L. Yates, Milwaukee, Wisconsin (closing): I might attempt to give an explanation of the different theories and the reasons for them. We tried to show you by means of slides a series of changes that take place. One of the striking things about these toxins is their effect on lymphoid tissue, and this is observed early in the disease. We will take only typical Hodgkin's disease, because to give our attention to others would complicate matters. The first effect is upon lymphoid tissue. The first effect is not great, and the first effect you get is an increase in the lymphocytes in the early stages. Soon after irritation has progressed there is proliferation, degeneration begins, and you have a decrease in the lymphocytes, and in response to the effect of the toxins you have the lymphoblasts replaced with connective tissue, and that is typical of the architecture of the gland. The same toxin acts on the so-called endothelial cells, inducing in them hyperplasia, as the result of which there is a difference in the circulation; there is an increase in the number of so-called transitional cells, which are not really transitional, but made up of the endothelial type of leucocytes. That accounts for the increase and even diminution in the number of leucocytes. And in another place the bone marrow is acted upon by the same toxin. There is an increase of pseudopods, which break

off in the circulation and appear in the blood stream. There is an increase in the number of platelets and an increase in the size of them early in the disease; or, because of the necrosis which we tried to show, which is chemotactic for eosinophiles, or because of the action of the toxin itself there is eosinophilia shown locally in the tissues and circulation. Later on the eosinophiles disappear and there is an increase in the number of neutrophils. As a matter of fact, what do we find in the gland? Let us take an early case and a late case. In the early case we find normally an increased or slightly subnormal number of lymphocytes; a marked increase in the number of transitional cells; an increase in the number of eosinophiles, an increase in the number and size of the platelets, which are innumerable, and no leucocytosis. We find a marked decrease in the number of leucocytes, because the lymphoblasts have been largely put out of business. In the late stages we have not only an increase in the number, but the proportion of endothelial cells is in excess of the small lymphocytes and terminates in leucocytosis made up of from about 70 to over 90 per cent of polynuclear neutrophils, so that we may have in the ordinary type of Hodgkin's disease a terminal picture.

If you look through the literature you will find great benefit has been bestowed upon these individuals by this and that form of treatment, notably by the X-ray. You will see an increase in the eosinophiles, because the X-ray takes a part in this tissue necrosis. I do not pretend that everybody can make this diagnosis. Anyone who has been trained, who is as skilful as he ought to be in making and understanding the interpretation of symptoms, can do it. In the lightly drawn cases it is impossible to do it.

Dr. Powers: How about the management in the later stages of the disease?

Dr. Yates: When we get an individual of that type in the later stages we make love to him or to the family, and after we get him into the hospital we give him enough morphine and other remedies to make him comfortable for the reason Dr. Powers mentioned, to get a chance to do a complete autopsy in case of death with a view to learning something.

The management of the early cases is another story. We have to depend to a large extent upon Dr. Bunting, because his interpretation of the blood picture is more comforting to us than anything clinically. Take two individuals in correspondingly good condition, with histories of almost the identical condition, and you have a feeling that both of them are open to radical treatment, and there is a gamble for cure to a great extent, and one of those you may think more favorable than the other. You have a perfectly hopeless prognosis from the blood picture, and you hesitate to do anything for the individual except palliation. We have had experience with from sixty to eighty such cases, and we felt justified in attempting radical measures on ten. There is much that can be done in making the last end of such patients' miserable condition, as one can imagine, comparatively happy.

In the course of our studies we have found out that there are definite pathological conditions in the tonsils, so that in every individual case, no matter how the tonsils appear, a tonsillectomy is done and local excisions made, even if only one axillary or one cervical gland is involved.

W. W. Grant, Denver: Did you ever see a

typical case of Hodgkin's disease in which there were no enlarged tonsils?

Dr. Yates: Yes. We have seen primary cervical Hodgkin's disease in which the diagnosis was certain and afterwards confirmed. We submitted specimens to one doctor, who has done virtually all that work for us, and got a written report that the tonsils appeared normal, and then received a written report from Dr. Bunting saying the tonsils were in the late stage of Hodgkin's disease, so that the size and clinical manifestations of the tonsils are absolutely no indication of the presence or absence of the disease.

Dr. Grant: Do you always take out the tonsils?

Dr. Yates: Yes, if we can do good. Every case is sooner or later complicated by enlarged tonsils. With the spitting and gagging, we know the case is absolutely hopeless unless the tonsils are taken out.

About the age of the patients, our experience has been that the ages vary from five to seventy-four. The cases are about equally divided between male and female. Males are more commonly affected than females. The average age we have not taken the trouble to find out, but I should say it is between eighteen and thirty-two. The majority of cases are in males. The only thing we have noticed particularly so far as race is concerned is that we have had a larger number among the Jewish people than any other single nationality.

We have been very much interested in what was the intermediate host in this infection. As far as we can tell from going over the literature, horses, cows, pigs, dogs, sheep, chickens, have been described as suffering from the disease. In a few instances the secretion was acid. Apparently dogs and horses and chickens have something to do with it.

Recently we wrote to all living patients and to the physicians of a great many more who were not living to get the location and some data with reference to the intermediate host. It is a method of infection which, as a rule, we have not been able to locate except in one family in which there was a case of lymphosarcoma. That individual had chickens on his farm which had been dying at intervals with a peculiar type of disease in which there were noticed enlargements. He sent us two chickens which were very sick, and these were submitted to Dr. Bunting. The report has not been made, but I am inclined to think from the gross appearances that we are dealing with the avian form of Hodgkin's disease.

As to the question of how early the diagnosis can be made, we do not know except from this: We took a polyvalent stock vaccine, representing all the different strains, and injected it into my arm, having previously taken blood and sent it to Dr. Bunting, he not knowing anything about it. He made a report of tuberculosis. I have had two or three surgical infections. I took as a first dose 15,000,000 of this polyvalent vaccine. At the end of the fourth week, one week after the final injection, I sent some more blood, cut off the label, and Dr. Bunting wrote "very early Hodgkin's." I waited about three months, sent some more blood, and got a diagnosis back of tuberculosis. We do not believe that the infection can become established in the portal of entry, except the tonsil, a great while before the toxins find their way into the circulation. In rabbits, guinea pigs, monkeys, dogs, almost as soon as the vaccine gets into the circulation, or say in a few hours, there begin to develop symptoms. A very early diagnosis can be made, and we have

been able to make it when the infection was limited to the tonsil and to a few cervical glands. That has been proven by taking out the racemose glands, by examination of the tonsil and by the fact that patients partially recovered. That is how early it is possible to make the diagnosis. All of these individuals who come in with a history of a period of malaise and "feeling like the devil," so to speak, are subjected without further ceremony to a blood examination, and it is surprising how often we get hold of the type of disease we are dealing with.

GREGOR MENDEL.*

W. W. GRANT, M.D., F.A.C.S., DENVER.

To the Medical Society of the City and County of Denver:

Gentlemen—This evening brings to a close my services as your presiding officer for the past year. For your cordial and friendly cooperation I am grateful; without it I could have done but little, and for this, and your manifestations of kindly goodwill, I desire to express my sincere thanks. To have served you in this capacity is an honor which I deeply appreciate, and I shall cherish it as one of the pleasantest memories of my professional life.

With the work and progress of the society you are familiar. Its review is intrusted to other hands. I desire to ask your indulgence on this occasion, while I briefly sketch the lifework of one whose posthumous fame far surpasses that which he enjoyed during his eventful life. The work of no man in this generation has excited so great an interest in the biological world as that of Gregor Mendel in his investigations of the problems and principles of reproduction and heredity, in both the vegetable and animal world.

Mendel was born at Heinzendorf, Austria, in 1822, and died in 1884. His parents were peasant farmers. He took a degree in the University of Vienna. At 24 he was ordained a priest; soon after this he taught natural science in the Realschule, at Brünn—1853 to 1868. He was at this time appointed Abbot of the Monastery at Brünn. He was imbued with the scientific spirit, and during these years he industri-

*Presidential address, read before the Medical Society of the City and County of Denver, January 4, 1916.

ously, patiently and alone, without exciting it seems the interest of others, carried on his first investigations of the reproduction



GREGOR MENDEL.

and development of the sweet and the edible peas, in his private garden. He kept observations and records of ten thousand plants which he had cultivated.

He was equally well informed in the science of meteorology. He was president of the Association of Naturalists of Brünn. In 1866, he, or the Society, published the results of his observations and experiments; yet his work attracted so little attention that it was not even noticed by the scientific men of Austria or Germany, nor of the world; in fact, until rediscovered thirty-five years later by Hugo De Vries, Professor of Botany in the University of Amsterdam. De Vries, Torrens and Tasehemak were engaged about this time in the same line of work, and in their investigations resurrected the published work of Mendel.

In 1902 his book was translated by Professor Bateson of Cambridge and published as "Mendel's Principles of Heredity". Since that date the subject has attracted the particular consideration of biologists, anthropologists, zoologists and many other scientific men and societies interested in this subject, and in the development and progress of the individual, the species and the race.

One writer states that Mendel's work "is one of the most fascinating chapters in the history of science". It is recognized, even at this early period, as not only of social and racial importance, but of economic value in the commerce of the world, as illustrated in the eradication of rust in the English wheat by cross-breeding with American wheat on Mendelian lines, under the supervision of Professor Biffen.

There is nothing new, in the last fifty years, in the doctrine that all life comes from two cells, but its principles and significance, says Prof. Bateson, "were never scientifically investigated and but dimly understood until Mendel's experiments were made and given to the world". His methods were original and peculiarly his own, and his explanations and conclusions novel, interesting and instructive. His first experiments were made with the pollen of the edible and the sweet peas, by fertilizing the ovule of contrasted characters, and in all respects throughout his experiments in plant and animal life the results were uniform and surprising.

When the germ cells and characters from parental sources are similar, the product is designated as "pure bred". When the characters are contrasts, no matter whether in quality, stature or color, the product is cross bred and is a hybrid. In the latter case, will the product be like one or the other parent, or a compromise between the two? Mendel claimed that the product could not be like both. He experimented to discover the law of inheritance in the hybrid offspring, which the biological world then expected would be intermediate in character between the two parents, but this was disproved by results because the germ cells are independent units. For instance, he fertilized the ovule of the dwarf pea with the pollen of the tall or giant pea; the resulting product was all tall peas, not a single dwarf, yet the product was hybrid. He therefore denominated the tall pea "dominant", the dwarf "recessive". The self-fertilization of this hybrid product resulted uniformly in three tall peas and one dwarf pea.

The same experiments were made with

colored and white flowers; with yellow and green seeds; with smooth and wrinkled seeds, and the demonstration was just as complete and uniform in results. The first products of the crossing of white and colored flowers were all colored. This was true of the yellow seed over the green, and the smooth seed over the wrinkled; the colored flower, the yellow seed, and the smooth seed were dominant; and equally in the second filial, or third, generation the results were three colored and one white flower, three yellow and one green seed, and three smooth and one wrinkled seed.

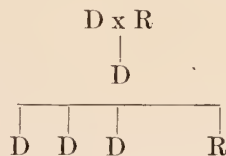
Dominant Characters.	Recessive Characters.
Tall Plant.	Dwarf Plant.
Colored Flower.	White Flower.
Yellow Seed.	Green Seed.
Smooth Seed.	Wrinkled Seed.

Experiments made with black and white guinea pigs showed similar biologic results. The first products of the cross were all black, and the first products of the hybrids were three black and one white. This rule or law of three to one was uniform. The black was dominant, the white recessive. The results of these hybrids of three to one are impure dominants, and will not breed true, for they have the recessive germ cells, though they are latent. Like, therefore, does not always produce like under such conditions.

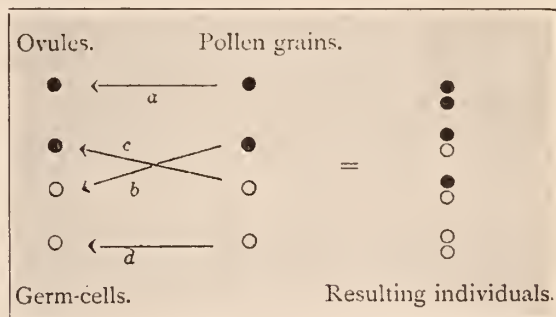
Mendel, it is justly claimed, displayed his genius in explaining these results. He claimed that in the hybrid there were *two* kinds of germ cells, two kinds of pollen grains and two kinds of ovules—one having the dominant character and one the recessive character from each parent, while there is only *one* kind of germ cell in the dominant and one kind in the recessive. These are conveyed to the separate and distinctive germ cells of the hybrid. No single germ cell can carry both dominant and recessive characters. There is no fusion of the germ cells, and they are not hybrids, though their parents may be. This is Mendel's characteristic theory of "segregation", which is, I believe, now accepted by students familiar with his work.

The explanation of the ratio of three to one in the second filial generation is most

interesting. Mendel concluded that the dominant and recessive germ cells in the hybrid exist in equal numbers. Of four ovules which are fertilized by four of its own pollen grains, two are dominant and two recessive. Only four combinations are possible, though there may be an exception. On this hypothesis, the result will be as follows: One dominant pollen grain will fertilize one dominant ovule (a); the other dominant will fertilize a recessive ovule (b); while one recessive pollen grain will unite with the remaining dominant ovule (c); and the other with the last recessive ovule (d); which makes three dominants and one recessive, as indicated by the diagram.



The following diagram shows how constituted:



The hybrid dominant is impure and will not breed true, and the same is true of the recessive. (a) is pure dominant, (c) and (b) impure, but the recessive while present in the germ cells is not apparent, and (d) is a pure recessive because not fertilized by a dominant germ cell of either pollen or ovule. This is the usual result of self-fertilized hybrids with contrasted characters. The pure dominant and the impure resemble each other and can only be differentiated by breeding. Professors Bateson and Punnett of Cambridge account for dominance on the theory that it possesses some quality, or character, that does not exist in the weaker recessive.

Recent experiments in plant and animal life by biologists and other scientists have

confirmed, in the main, the principles and conclusions of Mendel.

It would be unfortunate to muddle the question by controversial disputation with new converts, who are proverbially zealous and enthusiastic, and who would enforce rules and laws inconsistent with a judicial and scientific interpretation of observed phenomena, and even of established facts. The beneficent results of impartial investigations, and the influence of education and environment are interpreted by reason and experimentation and not by sentiment.

Man subordinates the plant and animal life of the world to his will, while neglecting the problems which are so important to human development and the evolution of man to a higher and better place in nature. Man lives longer and reaches maturity only when most other species have reached their limit and passed from the stage. He is, withal, the product of the most complex medley of hybridism of which the world gives example and proof. Much is being said and written recently as to the transmission of "acquired characters", which is closely related to the researches of Mendel and Weismann.

Herbert Spencer is credited with giving conspicuous place to this phase of the subject. He says individual variations are caused by conditions of living and are heritable. August Weismann published in 1895 his booklet on "Germinal Selection as the Source of Definite Variation", which had been preceded a few years by his work on the "Germ Plasm". If not based upon Mendel's view of the germ cell, Weismann's theories are similar to those previously enunciated by him. Weismann states that the transmission of acquired characters is impossible, to which White and Jelliffe (Treatment of Nervous and Mental Diseases) reply "that the absence of knowledge of the facts upon which Weismann's conclusion is based, if a fact, makes his own doubtful if not untenable, and that the theory of independence of the germ cells upon which it is based is not a satisfactory explanation". They also state, which is manifest, that it is impossible at the present time to define an acquired character.

Weismann contends (Germinal Selection)

that variations and modifications in the individual are due to selection and utility, and not to environment, and that the germ cells through which alone heredity is possible are not affected, but only the somatic or body cells are affected by acquired characters. The "continuous, or immortal" character of the germ cells as to family character and identity is true, but it would be fatal to a progressive evolution if parts, or certain units, of the germ cells were not modified by both the internal or nutritive environment, and the external environment or conditions of life, as stated by Spencer and others.

Hugo De Vries, the distinguished author and sponsor for the "Mutation Theory", states that such radical changes (mutations) come suddenly, and are not due to environment, but are germinal variations and are hereditary, also that there is much evidence to show that individual variations and racial characters are occasioned by environment and selection, and if so, "we are justified in regarding individual variations as acquired characters". Scientific men sometimes err in concluding that because a change or modification of an organism or character is sudden, or is not preceded by definite signs and indications, that it therefore is not influenced by environment or by long-standing causes. Otto Ammon says: "new varieties and species arise by the gradual accumulation, generation by generation, of the favorable deviations from the original type". This may be the case with the sudden manifestations of mutations as cited by De Vries.

Professor Conklin of Princeton, in a recent work entitled "Heredity and Environment", and in a biographical address on Weismann, states that the latter modified his views in later years by admitting that the germ cells were modified to a limited extent by acquired characters. He says it is probable that Weismann underestimated the possible influence of environment in producing changes in the germ plasm, and hence on evolution; otherwise it does not seem possible to explain the origin of many inherited mutations except by the influence of changed environment upon the developing germ cells.

Weismann's last little work, on "Variation by Germinal Selection", seems conclusively to establish this point, although contrary to his previous conclusions.

If acquired pathological characters are hereditary, the biological undoubtedly are. No one can read the history of Huntington's chorea by Professor Davenport, of the Carnegie Research Institution in Washington, without being convinced that acquired diseased characters are transmitted, not only to the doubtful distinction of the somatic cells, but equally to the germ cells. For out of three thousand relatives from five or six families, there were nine hundred and sixty-two choreics, and not a case developed unless one of the parents had the disease. Its hereditary character seems conclusive, and Professor Davenport regards it as a demonstration of the Mendelian Law, just as many others do other degenerative conditions of the nerve centers. Color blindness, polydactylism and hemophilia may be mentioned. The last occurs chiefly in the male. The mother transmits it to the male offspring, though it may be latent in her because the female does not manifest it unless both parents were affected. We cannot avoid the conclusion that the specific type of disease, as well as the degenerative diseases not specific, do affect and modify not only the somatic cells, but the sexual germ cells, and that certain pathological as well as biological characters are hereditary, and are either dominant or recessive in the offspring.

Tredgold of London, in 1915, in a book entitled "Mental Deficiency", says: "As to its mode of action, I think there is no doubt that syphilis is capable of producing an impairment of the germ cell, in consequence of which a condition of primary amentia results, which is indistinguishable from primary amentia in general". He makes a similar statement as to the degenerative influence of alcoholism on heredity and neuropathic disorders.

In the life and work of Mendel, we picture a farmer's boy who evidently desired an education in order that he might render some fitting service to mankind. After achieving this preparation, whether from

his own volition or impelled by favoring circumstances we know not, he was ordained a priest and became a Dominican monk. We have before us a man of God—a celibate who, there is no reason to doubt, respected his sacred vows. To an exceptional degree he was animated by a scientific spirit, and with no stimulus or encouragement but the promptings of his own heart and head, he originated and conducted in his quiet, secluded garden investigations of the most important biological interest and character, in their relation to human life and conduct. The spectacle was most unusual, and the example remarkable and beneficent in his modest and unselfish devotion to the progress and elevation of mankind.

His strong, modest face and fine head give an expression of firm but humble devotion to duty, characteristic of the student and the good man serving his fellow men in a cause that was divinely human and altruistic.

When the Hall of Fame that is not measured by four square walls is fully illumined, it will reveal, in the catalogue of the century, no more conspicuous name in the cause of scientific truth and humanity than that of Gregor Mendel.

325 Mack Block.

EXPERIENCES IN SERBIA.*

At the American Red Cross Mission in Belgrade,
From May to November, 1915.

W. A. JOLLEY, M. D., BOULDER.

I left New York May 1st, 1915, and arrived at Belgrade May 28, 1915, where I joined the American Red Cross Mission which occupied the National Military Hospital of Serbia. This hospital consisted of a group of large modern buildings completely furnished with German and French equipment. It was located in a prominent position on a high hill at the edge of Belgrade, which position furnished protection during the several minor engagements that occurred during the summer, and the heavy

*Address delivered before the Medical Society of the City and County of Denver, February 1st, 1916.

bombardment which ushered in the invasion of Serbia by the Germans and Austrians, as the buildings could be seen for a long distance from every side and were not in the immediate neighborhood of any of the fortifications.

It was a fine observation point to witness the military movements which occurred in that vicinity; Belgrade and its suburbs, a considerable area of Serbia, the junction of the Danube and Save Rivers, and that portion of Austria extending along those rivers being spread out below us. We had the privilege of witnessing several minor engagements between Austria and Serbia from this point of vantage.

The executive work of the hospital was in the hands of a Serbian military medical officer, who admitted and discharged the patients, conducted the quartermaster and commissary departments, and had the military command, for there were over 400 Austrian prisoners in the hospital enclosure. The American Red Cross personnel performed the surgical and medical duties and furnished the surgical dressings. This arrangement enabled the work to proceed smoothly, but occasionally incidents would occur which disturbed the harmony. The greatest complaint was about our food, which may have conformed in every detail with their tastes, but did not come up to our ideas of living. The other foreign missions had their own cooks, and had elegant meals on the same allowance that we were given.

The professional work was divided into two main divisions, medical and surgical. The members of the staff were shifted from one service to the other so that all had an equal opportunity at the different cases. The Austrian prisoners acted as orderlies: some had had sanitary training in the Austrian army, and proved very efficient under the direction of the American Red Cross nurses. The question of communicating in the various languages seemed a big job to handle, but experience soon showed us that only a few words were needed. All of us brushed up in our German so that we could talk to our orderlies, and bought Serbian grammars to acquire a working vocabulary

of the Serbian language. These two were not enough, for on one occasion we had nine different languages in one ward: German, French, Greek, Serbian, Turkish, Albanian, Magyar, and Bohemian. I would speak to my orderly in German; he would speak in Serbian to a patient who understood Serbian and the other language, and the latter in turn would address the other patient in the tongue desired. The above list of languages does not take into consideration the different dialects prevailing in the provinces of Austria.

It was difficult under these conditions to keep any accurate records of our work, so I am unable to present to you any statistics except some fragmentary tables that I compiled for my own use. The keeping of records pertaining to military hospitals is usually called "red tape" and hated by those who have to conform to the ironclad regulations which govern them. These are, however, essential to obviate the personal equation, for all must observe the smallest detail or the records are misleading. The Serbian doctors have suffered greatly during their wars and epidemics, so that no excuse need be made for any deficiency in their work. There is but a handful of them remaining and they have more important duties than to supervise the making of records, for they are the only ones conversant enough with the language to do the work.

I arrived in Belgrade during the decline of the typhus epidemic which devastated that country, and did not have any extensive personal work with that disease. The Rockefeller Foundation co-operated with the American Red Cross in taking charge of the sanitary work. Russia, England and France assisted also in the work, which was mainly advisory in character, although some constructive work was done. The small force of sanitarians, handicapped by ignorance of the languages and customs, could not hope to overcome in a few months the filthy habits and customs of centuries. It will take millions of dollars and years of time to educate them to our ideas of cleanliness, and to install modern sanitary conditions in that country. It must not be for-

gotten that most of the country was Turkish only two years ago.

Typhus is an acute infectious disease of great virulence. It is marked by an early prostration and presents clinical symptoms similar to typhoid; our main point of distinction was that an eruption was present on the back as well as the front of the body. A delirium was present in most cases during the fever, and left the mental condition disturbed after the decline of the fever. It was the custom to excuse erratic action on the part of any one by saying "He had typhus".

The sequelae were numerous, but I will mention only a few; the nervous system was badly involved in many cases, affecting the mind, the special senses, the motor and sensory nerves. I am not familiar enough with nervous diseases to describe the many phases that we saw. The muscular system furnished an interesting type of disease: the muscles would become hard and rigid, with neuralgic pains; this condition would usually persist for several months and then relax, but sometimes it would not and contractures would develop. We saw large abscesses which appeared several months after the apparent recovery. Thromboses were common, resulting in large ulcers or gangrene. A great part of our work during the summer was dealing with the wrecks caused by typhus.

Sporadic cases were brought to the hospital all summer, but were promptly isolated so that we had no infections. Recurrent fever or relapsing fever cases were very numerous during the typhus epidemic and continued after the other had subsided.

The Serbian surgeon in charge made a provisional diagnosis of all new cases, gave them a history sheet and sent them to our receiving ward. They were then put in a tub of hot water and given a hard scrubbing; the hair was cut short and the whole body liberally anointed with a petroleum mixture, for almost every man was infested with vermin. They were given a clean suit of pajamas and sent to the observation ward for diagnosis. They were transferred to the various wards when a positive diagnosis was made. Emergency surgical cases

were promptly sent direct to the operating room.

Our patients, twenty to fifty each day, came from the army that was stationed in northern Serbia. The medical cases were similar in character to those that you find in any large general hospital in the United States. We were handicapped in getting a complete history on account of the language, but we soon found that most of the patients needed rest and food more than they did medicine. I was surprised by finding a large number of advanced cases of tuberculosis, who had been discharged from the army and were too weak to make a living at home.

There were a large number of genito-urinary cases which were segregated and kept in a pavilion equipped for that class of cases. These men were rather refractory and did not seem to appreciate the work that was being done for them. They caused so much trouble that the military authorities took notice of the situation and discharged all the cases and sent them to the front, where they were to get such attention as they could from the field surgeons.

The hospital was equipped with a fine bacteriological laboratory, which was conducted by a Serbian doctor. Dr. Sellards of Harvard, and Drs. Plotz and Baer of Mt. Sinai also had laboratories for the purpose of studying typhus.

I found the following cases in the surgical wards when I went on duty June 1st:

Post-typhus abscesses, 24; post-typhus gangrene, 26; post-typhus ulcers, 23; recent gunshot wounds, 6; old gunshot wounds, 47; frost bite (amputations), 10; fractures, 11; adenitis, tuberculous, etc., 25; miscellaneous, 50; total, 225.

We had such oddities as two cases of horsebite.

We kept one ward for our clean surgery, but most of our work was dirty work, the wounds being badly infected when the men were admitted. We had a hard fight over the food question in regard to these cases; the Serbian colonel could not understand why these sick men should have more and better food than a well man. He would not

allow them to have the food we prescribed, but fed them on black bread and soup.

We had no ambulance, but emergency cases were brought in every day. June proved to be the quietest month, as there was no skirmishing, and so we had few gunshot injuries. The list for June was:

Amputations, finger, 4; leg, 1; thigh, 3; toe, 1; appendicitis, 2; buboes, excision, 8; empyema, 3; eye, enucleation, 2; fractures, tibia, 1; spine (?), 1; clavicle, 2; thumb, 2; gunshot, 20; hernia, 5; hydrocele, 1; keloid, 1; knee joint aspiration, 1; lipoma, excision, 2; lacerations, 2; mastoid, 4; rectal fistula, 3; sarcoma of jaw, 1; tuberculosis, abdominal section, 2; glands excision, 16; abscess, 2; tracheotomy, 1; urethrotomy, 1; varicose veins, saphenous excision, 1; Salvarsan, 1.

We spent the morning in the operating room. We went to the wards in the afternoon and did most of the dressings, being assisted by the nurses and the orderlies. When we could not get to the ward the nurse usually did the dressings. This part of the work was very unpleasant, for many of the wounds were dreadful.

We followed the custom of most large hospitals by planning our operations so that there was a steady flow of work, excepting the emergency cases. We usually finished about 4 p. m., when we were free to go where we wished. Belgrade was practically deserted during the summer, as the residents were in constant dread of the imminent invasion. There were no social functions, not even churches or moving picture shows to attend, so the work became very monotonous. Our only relaxation was to visit the cafés, with the tables on the walks, and meet the army officers, Serbian, English and French. These men were very courteous and we spent many pleasant hours visiting their commands.

The period of our enlistment ended October 1st, and we had made all our plans for leaving, but the Serbian government secured permission for us to remain, as they knew that the long-delayed invasion was at hand, and we should be greatly needed. The invasion furnished us with enough experi-

ence to make up for the monotonous summer, as we were swamped with work. The invasion began with a three days' bombardment of Belgrade, which was confined to the fortifications and the part of the city where the advance was to be made. Thirty-centimeter guns were used constantly during the three days' bombardment, while at intervals we could hear the smaller guns and the rifles. We were in little danger, as the Germans and Austrians had given orders respecting our hospital, but we did not know that until the affair was over. Several shells and many bullets fell in our grounds, which kept us uneasy until the firing stopped.

The wounded began to arrive shortly after the commencement of the attack, but the deluge did not begin until after the city was captured, as the Serbians were not able to bring their wounded to us. The wounded were given first aid dressings and collected at dressing stations or field hospitals by the stretcher bearers. They were brought from these places to our hospital in improvised ambulances. The small wagons used in that region were collected into sanitary trains; straw was placed in the wagon and two recumbent cases were placed on the straw; boards were placed across the frame of the wagon body and two wounded men in stretchers were loaded on that, making four wounded in each of these wagons. The weather was rough, with rain every day, so we received our cases soaked through and covered with mud and straw. The wounded did not arrive in a steady stream, but came in train loads (sanitary trains). They were carried from the wagons and placed on the floors of our halls until they could be examined. Some of these men displayed remarkable fortitude; it was not uncommon to have a man walk into the hospital with a perforating wound of the chest or abdomen. All cases were given a dose of morphine as soon as they were admitted. Two nurses kept us supplied with dressings, which were placed on small tables in the operating rooms. I kept three wounded in my operating room all the time; a bad case on the table and two moderately wounded on chairs. I dressed ten severe injuries in one hour by actual count. We had no water, so

we used gasoline to wash the area around the injury, and disturbed the wound as little as possible, but soaked it thoroughly with tincture of iodine, applied suitable dressings and sent the patient to the ward.

Operative cases were grouped together so that we could handle them at one time; it is remarkable the small amount of ether that was required in these men, who were completely exhausted; they had received morphine upon their admission, so one doctor could give the anesthetic for several cases in short order.

The Austrian orderlies that we had trained during the summer were taken to interior hospitals a short time before the invasion, and young Serbs with no hospital training took their place, so we were greatly handicapped in our work at the time when we needed them most. The Austrians furnished assistance by detailing detachments from the successive organizations as they passed through Belgrade. I well remember the first detachment, Hungarians. We had no interpreter who knew Magyar, so that you can imagine how much we were impeded. Other detachments from the different provinces followed—Bosnians, Bohemians and Slavonians.

Our hospital served as an evacuation hospital. The wounded were removed as rapidly as possible, by hospital ships, to the interior of Austria. We could not watch the progress of our cases, for we seldom had them more than four days, and the numbers were so great that it was impossible to keep track of them. One evening we received about four hundred wounded Serbian prisoners who had been brought down the Save River on hospital ships. They had been several days en route, without any attention, so that you can imagine the filthy condition that some of them were in.

The Austrians did not have any system of marking their wounded with diagnosis tags, which made the work much harder than if every case carried a diagnosis card which would show when the wound should be dressed. We had to examine every man when he entered the hospital, and I have known of instances in which the men had been examined twice, owing to the fact that

they were not removed to the wards but placed back in the halls. I do not see how this lack of diagnosis cards could have been remedied, on account of the languages.

Belgrade has a fine water system and modern sewers, but these were disabled on the second day of the fight, so all our water had to be carried from springs. There was a long waiting line at each place, so that it would take several hours for our men to make one trip to the springs with their buckets. The Save River was only a short distance away, but no attempts were made to bring water to the hospital in wagons for our steam heating and sterilizing plants. The weather was cold and rainy during the entire time of this invasion, so that the wounded suffered greatly in the large, elegant wards, which were as cold as tombs. We closed all the closets and dug trenches for latrines. I established ten latrines covered with tents in one morning with twelve men. The municipal electric light plant was shut down the first day, so we had to use lamps and candles.

This recital of our trials may not be interesting to some who are expecting a highly technical article, but I think that it faithfully portrays the conditions that must be met during war time and shows you that the medical and surgical men are not the only ones who should be interested in handling the wounded, and that the sanitary troops should have greater authority with reference to food and supplies.

Our army requires complete records of the sick and wounded, so that statistics can be compiled. Statistics are misleading unless they are accurate and complete, and can not usually be obtained until several years after the war is over; any attempt, then, on my part to present anything in the nature of relative figures would be scientifically worthless.

I have seen hundreds of bullet wounds in all parts of the body. They can be divided into three classes: First, small, clean holes, exit and entrance wound alike; second, small entrance and large exit, where pieces of the bone had been shattered; third, ragged, open wounds made by separation of the jacket and body of the bullets. Nearly all

of the wounded men had multiple wounds, for the bullets usually went through the body, so we were always careful to search for the second hole. It was peculiar to notice the number of cases in which the bullet could not emerge from the body on account of the tough skin. We had a large number of cases in which the bullet was lodged just under the skin and exerted a painful pressure. We saw several machine gun wounds; two or more wounds in close proximity with exit wounds to correspond. The Germans used the sharp-pointed and the Austrians the blunt-nose bullet.

Shrapnel wounds of all descriptions were seen, but not very many severe lacerations; I supposed that the very severe ones died before they could be brought to us. The high explosive shrapnel caused the same character of wounds that we see here in the mines as a result of "missed shots." I removed several of the lead balls which had penetrated the body or limb and were retained by the skin.

I cannot give you the number of men that we treated, or any estimate as to the relative proportions of the locations of the wounds, for we kept no records. We estimated that we handled about 2,500 men. Except in a few cases, we did not have opportunity to watch the progress of the wounds, so I am not able to discuss the infections that we hear prevail on the west front. While visiting the American Ambulance Hospital at Paris, I was informed that 80 per cent of their cases are "gas" cases and that they develop very rapidly. We did not have more than ten such cases, so that I judge that this condition is rare or we should have had a great number more.

We had four cases of tetanus; two died, the other two still had rigidity twenty days after the development of the symptoms, but appeared to be improving. We did not give the prophylactic dose to any cases; we gave about 35,000 units of antitoxin to the four cases mentioned.

Secondary hemorrhages occurred in six cases, at periods as long as fourteen days after the injury.

I have stated that our cases did not remain with us longer than four or five days,

yet have given examples of cases remaining longer than that. This happened in this way: We would receive an order to prepare for transportation 200 recumbent, 100 sitting and 100 cases able to walk. I would go into the wards and mark the cases that I thought should go with pieces of the blue paper that is wrapped around cotton. Some of these men would prefer to remain, while others wanted to go, so when I left the ward they would pass these tags on. It made no difference to me which men went, and I did not try to correct this breach of authority, so when we left I found some men still in the hospital that had arrived the first day. Then there were a few cases which could not be moved on account of the severity of their injury.

We had a fine X-ray outfit, but were not able to use it during the rush, as the electric light service was cut off.

I found that the greatest criticism that I could make would be against the executive or administrative functions of the sanitary corps. It is the same here: a noted surgeon may make a very inefficient field officer, where he has to look after every detail that must be considered with relation to the work in the field. I will illustrate: We would get an order to prepare 400 men for transportation at a given hour. These men would have waited twenty-four hours before they were removed. This was due to inefficiency somewhere.

The stretchers used by the Serbians were those that they had captured from the Austrians when these were driven from Serbia in the winter of 1914-1915; they are much more comfortable than our stretchers, and serve as a cot. I tried to dress most of my cases without removing them from the stretcher, and found that it saved time and did not hurt the patients so much as lifting them on the table and then lifting them back. It is hard work lifting men, so that every little saving in time and labor means that the other cases are reached more quickly.

The Austrians had some elegant automobile ambulances which they used on the paved streets of Belgrade, but the field

work was done with the small wagons that I have mentioned before.

I have tried to give an account of those features of my work which I considered the most prominent. I could extend this article indefinitely by giving detailed descriptions of the hospital, the interesting orderlies, patients and people of Serbia; I could report dozens of medical and surgical cases; I could describe the military equipment and maneuvers that I have witnessed; I could write a book on my traveling experiences; but I will conclude with the hope that what I have already given will be interesting and instructive.

REPORT OF A CASE OF PELVIC CELLULITIS, OR PHLEGMON LIGNEUX OF THE PELVIS.*

WALTER A. JAYNE, M.D., DENVER.

Phlegmon is the old classical term applied to brawny inflammatory swellings of the connective tissue, especially the subcutaneous connective tissue. It has often been used for pelvic disease. Nonat defined pelvic cellulitis as peri-uterine phlegmon. Some years ago Réclus applied the term phlegmon ligneux to certain low-grade infections of the connective tissue of the neck, caused by various microorganisms attenuated in virulence, characterized by swelling and fibrous induration, and tending to recovery with or without foci of suppuration. Since that time it has been adopted frequently for similar inflammatory infiltrations of the connective tissue of other parts of the body, and phlegmon ligneux of the pelvis would more correctly define the conditions observed in the case here reported than pelvic cellulitis as commonly used.

Diseases with which we are thoroughly familiar often present unusual phases which are not only interesting in themselves but instructive. The case I desire to report is an instance in point, and as a rather extensive search through the literature has failed to reveal a detailed description of a similar one, it appears to be worthy of record. This

must be my excuse for introducing the time-worn subject of pelvic cellulitis for your consideration.

Case Report.—Mrs. B., aged 26, secundipara, while in labor was admitted to the County Hospital, Denver, December 14, 1914, and was delivered of a girl two hours later. The record makes no mention of complications. She had previously enjoyed good health and her family history is unimportant. On the third day after the confinement her temperature rose to 100.8 degrees, and on the fifth day to 102.6. During the remainder of her stay in the hospital she ran a mildly septic temperature ranging from 100 to 101.6 and for the two days before her removal to a convalescent home, on January 1, 1915, her temperature stood at 100. There is no record of any local examination and the treatment consisted of external douches and the administration of aspirin. A Wassermann test was made with a negative result. After her removal to the home the fever is said to have continued, but of this there is no record. However, she grew steadily worse, returned to the hospital January 8th, and was transferred to my service two days later.

When I saw her she was anemic and somewhat emaciated, and complained of weakness, some tenderness over the lower abdomen, especially the left iliac region, and a muco-purulent discharge which had continued since the childbirth. The abdomen was flat without rigidity, and there was moderate tenderness over the whole lower abdomen, but more marked on the left side. The cervix had not been lacerated and was well contracted. The uterus was in the anterior position, enlarged but not particularly sensitive to pressure, but much restricted in mobility. To the side of the uterus and occupying the whole of the left pelvis was a hard, fixed mass which did not reach into the abdomen, tender on pressure and without suggestion of fluctuation. The right broad ligament was also thickened and rigid, but in less degree than the left. The pulse was running about 92 to the minute and the temperature had a morning and evening range from 99 to 101. A blood count gave 22,200 leucocytes. A

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

differential count was not made. Smears taken from the urethra and cervix were reported as negative for the Neisser cocci. The patient was definitely septic, but as her condition was not favorable for a radical operation it was deemed best to defer operative measures for a few days in the hope that pus would be located in a position that could be drained into the vagina. During the ten days she was kept under observation no point of fluctuation could be determined. She was not improving, and as the evening temperature had risen to 101.8 and 102.4, it was decided to explore the pelvis.

Operation.—On January 20th an opening was made through the vault of the vagina into Douglas' pouch, and as the mass was everywhere uniformly hard, further search for pus was made through the usual abdominal incision. On opening the abdomen the peritoneum did not present an abnormal appearance. The pelvis was roofed over and shut off by the mesocolon, which was fan-shaped, infiltrated, about three-eighths of an inch thick and felt as rigid as moist paste-board. The transverse colon was lying across the lower abdomen from one iliac fossa to the other in the anterior peritoneal fold in front of the bladder. Its walls were also infiltrated, thick and heavy, and it formed a rather rigid tube. The colon and its mesentery were adherent to the parts beneath and were separated as though pieces of stiff, moist card-board were held together by half-dried glue, and lifted up like a lid. The pelvic cavity was filled with an apparently uniform mass in which the organs were not visible and the infiltration reached from the true pelvis into the iliac fossae and the lower part of the anterior abdominal wall. The uterus being located, the adhesions in the pelvis were separated only sufficiently to determine the absence of pus, search being made in the Fallopian tubes, ovaries and broad ligaments and about the bladder and rectum, and to connect with the opening made from the vagina. A drain of washed-out iodoform gauze was placed behind each broad ligament and carried into the vagina. The colon was placed in its former position, the only one possible, owing

to its rigidity, and the abdomen was closed by the usual sutures. The adhesions were not organized, of a honey color and bled little. There were no flakes of lymph, pus or liquid exudate except a half dram of a grayish serum posterior to the left cornu of the uterus. A specimen of this was sent to the laboratory and the report returned stated that it was negative except for leucocytes.

Following the operation the patient rallied and progressed favorably for four days. The drainage of a bloody serum was profuse. On the fifth day she began vomiting, the temperature fell below normal and for three days her condition was critical, but she finally rallied after much stimulation and the unremitting attention of the house surgeon, Dr. Cecchini. The discharge from the pelvic drains gradually changed to pus. The temperature after the operation ran between 100 and 101, but on several occasions rose for a short time to 102 and 102.4 and then fell as the drains were cleared. The superficial portion of the abdominal wound broke down and healed by granulation. The patient improved, though very slowly at first, and when my term of service ended on March 1st she was fairly convalescent and able to be propped up in bed. At that time the discharge had materially diminished in quantity, the mass in the left of the pelvis was still hard and apparently scarcely diminished in size, but that on the right was definitely smaller.

By the courtesy of Drs. Harvey and Howard, who took charge of her, I was enabled to follow her progress from time to time. About the middle of March she developed a ureteral fistula, the urine escaping through the opening in the vault of the vagina. The temperature did not reach and remain at normal until about the 1st of April. Even then the mass on the left was still hard and diminishing slowly in size. She was discharged on April 7, but she remained in bed until about the 1st of May, by which time the discharge of pus and urine from the vagina had just ceased. During the summer she gained steadily and she is now fairly strong and feels well. At an examination made in the latter part of August I found

the vaginal wound entirely closed and but a very slight trace of induration in the left broad ligament, none in the right. The uterus was freely movable and in the normal position.

The anatomical site of pelvic inflammations has been a matter of much controversy. Early gynecologists recognized that both the connective tissue and the peritoneum were involved, but failed in their differentiation and interpretation. The prevailing opinion was that all such pelvic diseases of women were essentially cellulitis. The observations of Bernutz and Goupil announced in 1862, confirmed by the pioneers in female pelvic surgery and early bacteriological studies, corrected this view and so thoroughly demonstrated that such diseases in the vast majority of cases are due primarily to the infection of the tubes, ovaries and peritoneum, that McMurtry in 1891 felt justified in saying that "pelvic cellulitis is such a rare condition that we may practically exclude it from the consideration of the operative treatment of pelvic inflammations of women", and of late years it has been relegated to a very minor place in pelvic pathology and has received little attention.

A study of the life history of the microorganisms concerned in attacks upon the female pelvic organs and the pathological results as observed on the operating table have led to the conclusion that the dominant factors in the selection of the tissues involved in these inflammatory diseases are the predilections of the causative organisms and the channel by which they reach and infect the deeper pelvic structures. Trousseau long since called attention to the veins as avenues of entrance, and this observation still holds good and explains the cases of thrombo-phlebitis. We now know, however, that the chief and by far the most common channel of infection is by way of the mucous membranes, that the tubes, ovaries and peritoneum are infected primarily from the endometrium, and that whatever infection reaches the adjacent connective tissue is secondary, the result of proximity, and is generally limited in extent. For such cases Virchow proposed the term "perine-

tritis". Invasions of the pelvic connective tissue, especially those following the injuries of childbirth, result in indurations adjacent to the uterus and along the base of the broad ligaments and were defined by Virchow as parametritis. Following childbirth and abortions, when the numerous lymphatics are actively engaged in the processes of involution, they are occasionally invaded through the uterine walls by streptococci, staphylococci, pneumococci and colon bacilli. The result is a lymphangitis with a blocking of the lymphatics of the broad ligaments and varying degrees of infiltration of the widely distributed connective tissue, a true cellulitis or phlegmon, more or less acute, which may break down in pus formation or slowly go on to complete or incomplete resolution.

The case now reported is interpreted as one of this character, a lymphangitis which resulted in an unusually extensive infiltration of lymph and cellular elements with fibroblasts into the connective tissue and walls of the pelvic organs, the uterus, tubes, ovaries, bladder and rectum, reaching into the abdomen and invading impartially by contiguity the overlying colon and its mesentery, blending all these tissues in a firm mass of woody hardness.

The streptococcus was isolated from the blood of this patient shortly after the operation, and to this organism, probably attenuated in virulence, should be ascribed the causative rôle.

412 Metropolitan Building.

DISCUSSION.

T. Leon Howard, Denver: The interesting case just reported by Dr. Jayne, at whose request I am to discuss it from a urological standpoint, came under my observation at the County Hospital while on the service of Dr. Harvey, Dr. Jayne's successor. Dr. Harvey wished an examination made in an attempt to determine the source of the urine found many times a day on the dressings and in the bed.

There are several ways of determining a vesico-vaginal or uretero-vaginal fistula, which was suspected in this case. Probably the simplest is to give the patient methylene blue or indigo carmine and pack the vagina with white gauze. If the urine is passing through some vaginal opening, the stain will appear on the gauze where it comes in contact with this opening. In this case I introduced a catheter in the drainage wound found in the posterior cul-de-sac, and tied this catheter in a bottle. The following morning the bottle had collected several ounces of purulent urine. Next

I cystoscoped this patient and found the right ureter unobstructed to the kidney and clear urine flowing from that side. On the left side the catheter met with an obstruction about 2 to 3 cm. from the bladder, and repeated attempts with different sized ureteral catheters failed to pass the obstruction. No urine could be obtained through this catheter, nor was there seen any issuing from the ureteral mouth. The bladder showed no inflammation and no false openings.

About three days after this examination the nurse, much to my surprise and gratification—for I had begun to wonder what operation could be done to give this patient relief—reported the dressings and bed of the patient dry. The patient thought she was passing a larger amount of urine from the bladder. It was found that the urine from the bladder now contained pus where before it was clear. The chills and fever she had been having probably came from a pyelitis, for nearly all of this class of patients develop such an infection.

A second cystoscopic examination was made. Both ureters were patent and catheters passed easily to the kidneys. A small opening was unquestionably made by the catheter through some soft obstruction at the first examination, allowing the urine to enter the bladder. This gradually increased the size of the opening.

What caused the rupture of the ureter is quite an interesting question. Yesterday I cystoscoped this patient, introduced catheters in both ureters, and filled them with a 10 per cent. solution of collargol; and Dr. Childs made the plates shown here. This was done in an attempt to throw some light on the subject and the condition of the ureters at the present time.

I think it was impossible for the ureter to have been ruptured during operation, for no instruments were used by Dr. Jayne after going through the vaginal wall. Ureters are too resistant, unless badly diseased, to be ruptured with the finger. Then again a flow of urine through the drainage opening would have occurred at once. It was over two months following the operation before any urine was found on the dressings or bed.

The usual site for ureteral fistula resulting from injury or necrosis is, as found in this case, in the region of the uretero-vesical junction.

In Dr. Jayne's case one of three things happened: The severe pelvic infection he found may have involved all the coats of the ureter, interfering with its blood and nerve supply, and the round cell infiltration produced necrosis. Second, Dr. Jayne in attempting to locate the focus of infection in the left broad ligament with his finger, may have denuded the left ureter. As shown by recent experiment, a ureter stripped of its blood, nerve and lymphatic supply will undergo necrosis. Thirdly, when the drainage was placed from below in the pelvis, some one of these drains may have rested on the left ureter, producing pressure and slow necrosis.

Either one of the three causes, or a combination of these causes, could have produced this condition; but judging from the length of time it required for the ureter to rupture and the slowness of repair—for the patient informed me yesterday that urine passed through the vagina at intervals for six weeks after leaving the hospital—it is more likely that the general infection found in the other pelvic viscera caused necrosis and final rupture of the left ureter.

Benjamin H. Matthews, Denver: There were brought to me specimens of urine from each kidney. In the right there was no acid, no sugar, no blood, no pus. There was not a sufficient quantity for me to test the specific gravity. In the left specimen the urine was of acid reaction, with a trace of albumin and no sugar, there was much pus, some red blood corpuscles and a short chain motile Gram-negative bacillus, probably of the colon type, a type also mistaken for streptococcus. The streptococcus is not a common organism in the urine. There is a small streptococcus in old bladders which is a non-pathogenic organism, but the commonest organism, which is called a streptococcus, in the urine is the colon bacillus, which is not longer than it is wide, and unless great care is taken, one might assume it was round, and yet if it is Gram-negative, and its motility is looked for, one will find this to be a bacillus of the colon type.

Charles S. Elder, Denver: There is nothing more irritating to one of scientific inclination than a loose and unrelated fact. Dr. Jayne has felt this irritation and has assumed a connection between the rather common pelvic cellulitis and the rare woody phlegmon of Réclus. This novel observation shows that he is anaphylactic. He has been sensitized in the pursuit of truth. These two processes certainly resemble each other. They may represent exactly the same train of events. If so, a pathologic peculiarity has been reduced to a common thing, out of its accustomed place.

This subject of Dr. Jayne's has, as he has shown, interesting historical relations. Pelvic cellulitis was the only kind of pelvic inflammation with which our immediate ancestors were familiar. They reasoned by analogy as we do. They lacked the facts that we have. Superficial cellulitis was familiar to them. Deep cellulitis was assumed when its symptoms were present, but the region involved was removed from vision. We are now more familiar with those infections of the genital tract which follow mucous paths. Pelvic cellulitis is apt to be forgotten in the expectation of finding the more common lesion.

Often misjudged it is often mistreated. Unless an abscess has formed, the condition is not to be improved by attempts at drainage. The brawny mass in the pelvis tempts one to exploration, but the bladder and the ureters are near and are not to be identified in the massive infiltration.

The diagnosis of pelvic cellulitis will not often be missed if one approaches the case without prejudice and remembers the areas of loose connective tissue in the pelvis. These lie at the sides of the uterus, in the bases of the broad ligaments, between the uterus and the bladder, and low between the vagina and the rectum. Infiltration between the uterus and the bladder is wholly unlike any intraperitoneal infiltration. The low-lying hard planes of exudate need nowhere be confused with inflammation of the uterine appendages.

Walter A. Jayne, Denver (closing): In using the term pelvic phlegmon or phlegmon ligneux of the pelvis I have done so to suggest that the infiltration and hardness of the tissues in the present case bring it into relation with the other cases of this disease known by that name. Lejars, in speaking of phlegmon ligneux, said that it was not a disease in itself, but rather a type of disease, and frequently that it is only by the evolution of the cases of cellulitis that the identity of the process may be determined.

THE INTER-PAROXYSMAL VASO-MOTOR CRISES OF MIGRAINE*.

E. W. LAZELL, M.D., DENVER.

As soon as one consults the usual writers on migraine it becomes at once apparent that much of confusion arises from the fact that several clinical entities are being considered—that one person is discussing headache due to eye-strain; another headaches due to arterio-sclerosis; while others may be discussing headache due to nephritis, syphilis or a number of other causes. The writer intends to offer the results of study of about twenty carefully-investigated cases of ophthalmic migraine, and to invite your attention to and discussion of this particular clinical entity.

The result of this study has been rather to throw a new light on an old theory than to bring forth a new theory of the etiology. It has strengthened the writer's belief in the correctness of the humoral theory, the theory of an auto-intoxication as the cause of many of the symptoms. The primary cause of the condition still remains in doubt.

The following definition is offered: Ophthalmic migraine is an extremely complex syndrome characterized by a periodical abnormal state with a peculiar oppressive unilateral or bilateral, localized or general pain in the head which develops gradually until the pain is severe. This pain is often preceded by a prodromal sense of chilliness, and a sense of being ill, and is usually accompanied by nausea and vomiting, depression and sensory disturbances such as hyperesthesia of sight, hearing and smell and characteristic visual signs such as scotoma, flying specks or partial blindness. The onset of headache of the typical attack is frequently in the early hours of the morning and the termination by vomiting or after sleep. Abortive attacks are common. Motor and sensory disturbances of many kinds are found in almost all regions of the body. During the interval the patient is never quite normal, but suffers from various motor and sensory errors.

Starting with the belief that the condition was an auto-toxemia, the writer sought to determine an index of urinary toxicity of easy application. The most simple index is the amount of urea in a 24 hours specimen. While the amount of sugar in a diabetic urine is not an absolute index of the severity of the diabetes, still it is a fairly good index. In the same way, the amount of urea is a fairly good index of the kidney sufficiency. It is needless to say that this idea was not original with the writer. Phenolphthalein or one of the other indicators might have been used, but the primary conception was that the nitrogenous metabolism was at fault and hence the urea test was used. Urea as an index is rather crude, but this work was done five years ago and in general practice, not as scientific laboratory investigation.

The patient was instructed to save all the urine secreted in 24 hours, measure the amount and bring a specimen of the total measured quantity every day for 30 days. The writer insists that this is the very essence of the test, that it be prolonged over a long period of time. Other investigators had found the amount of urea on the day of the attack either normal or increased. When we start with a 24-hour specimen a few days after the attack of headache we may find that the amount of urea secreted is normal for the body weight. The normal amount is taken to be about 3 gr. per pound body weight. Thus a 150-lb. man would secrete normally 450 gr. of urea. Patients were cautioned not to indulge in any unusual exercise, change of diet or otherwise go out of their regular routine of life. Careful and continuous supervision of the patient's life was necessary to see that he did not do so. The writer was surprised to find that each case of typical ophthalmic migraine investigated showed a consistent and typical curve in the amount of urea secreted, and that this curve had a definite and constant relation (1) to the onset of the premonitory symptoms, (2) to the onset of the headache, (3) to the termination of the attack and (4) to a constant and definite blood-pressure current. The blood pressure

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

was taken every day at about the same time.

Ruled charts were made, similar to a fever chart, showing the date, amount of urine in 24 hours and the total computed secretion, and having below a space divided by lines to represent a variant of 50 grains urea. A double or heavy line was drawn through the line representing the normal amount for the body weight for each patient. A space opposite was left for a record of the physical condition of the corresponding day. The line representing normal for urea was also taken for normal for blood-pressure at 120 mm., and each line of 50 gr. urea above and below taken to represent a variant of 10 mm. blood-pressure.

The daily amount of urea and the blood-pressure were recorded through at least one complete cycle in every case. Study of these charts showed (1) that the amount of urea in these cases is habitually below normal. A new line was then determined to represent the mean normal for the individual patient. (2) It was found that for several days before the attack of pain the amount of urea gradually decreased till the onset of the pain, when the amount of urea shot up till as much as 1,500 grains of urea were secreted on the day of headache and the succeeding day following which the amount was gradually reduced till the onset of the pain of the next attack. This reduction in the amount of urea was below normal for the estimated amount for the body weight at all times except after severe pain and for the average mean for the individual just before the headache. (2) The blood pressure is habitually below normal for these patients, gradually falling till the onset of the pain when it also is increased, some cases recording as high as 170 mm. of mercury on the day of the pain, that had showed but 100 mm. of mercury the day before. (3) The fall in the blood-pressure is much more abrupt than the fall in the amount of urea. (4) The onset of the severe pain is usually abrupt as also the cessation. (5) The increase in the blood-pressure as well as its fall corresponds with the onset and cessation of the pain. In the specimen chart, No. 1, which is made to represent an uninter-

rupted typical case, the continuous line represents the line of urea in grs.; the dotted line (in red) represents the blood-pressure in mm., and the line of dashes represents the severe pain, zero for headache being the line for normal amount of urea in grains.

The study induced the following conclusions: (1) The migrainous patient habitually secretes an insufficient amount of urea. (2) This reduction in amount is steadily less till the day of the headache, resulting in an accumulation of toxins. (3) The headache is a protective measure on the part of nature and results in a great increase in blood-pressure, during the continuance of which a large amount of toxic material is eliminated. (4) After the pain ceases the blood-pressure and amount of urea secreted gradually diminish. This cycle is repeated over and over again.

Further study of these charts showed that especial emphasis should be placed on the idea that the headache is a protective measure. The onset of the headache in the morning after a gradual accumulation for days and after a night when the already low blood-pressure is still further reduced during sleep, is thus explained. The writer wishes at this time to emphatically deny a belief on his part that an accumulation of urea is the cause of migraine. As before stated the urea has been used solely as an indicator of the nitrogenous elimination, crude as it may be. Some other sub-oxidized nitrogenous compound or compounds are probably the exciting agent in an organism predisposed in some way. It is to be hoped that some investigator with greater facilities for determining actual toxicity of the blood itself may become interested in the problem and give us some more concise and scientific data.

It was found that the mental condition of the patient and his feeling of well-being corresponded with the amount of urea eliminated.

So far in the investigation no especial difficulty was encountered. But it was noticed that showers of urates and uric acid, together with an increased amount of urea, were present when there was no headache. At this time there were often peculiar sen-

sory disturbances such as buzzing in the ears, or hemianopsia. When these symptoms occurred there was an increase in blood-pressure, so that these vasomotor storms represented the equivalent of a headache. After such an event the patient invariably felt better for a day or so. These vasomotor storms were accompanied by various sensory disturbances such as numbness and tingling, vague pains, or visual disturbances. It frequently happened that these vasomotor disturbances were apparently brought on by indiscretions in diet, indulgence in coffee, loss of sleep or other accidental factors, especially mental overwork or worry, producing polyurea which is always of low specific gravity.

This brings us to some important points in the therapeutics, some of which are but little appreciated. (1) Uric acid and the sub-oxidized nitrogenous products are sparingly soluble in pure water (uric acid 1 in 1500 parts) but are freely soluble in a concentrated urine. (2) Coffee and caffeine increase the watery constituents of the urine but not the solid parts and consequently favor a low specific gravity urine and hence retention, the probable explanation of the action of coffee. (3) Distilled water (so often prescribed on the mistaken theory that it will take up more solids) when used alone produces a low specific gravity urine and induces retention, and should not be used. Let us refer for a moment to the old treatment for rheumatism, salicylate, sodium bicarbonate and potassium acetate. The alkalinity of the blood is due to the alkaline carbonates, the source of which is the salts of the vegetable acids, the citrates, acetates, malates, etc. Hence the value of the salicylates (and by the way the salicylates are found in the blood as sodium salicylate and it remains today the best salicylate). The sodium carbonate often administered with the idea that it increased the alkalinity of the blood of course never had any such action but was changed into the chloride which is eliminated in the urine and helps to increase the specific gravity, and also in large amounts helps free the phosphates which still further increase the specific gravity of the urine. The

potassium acetate also acts as a good vehicle for water, and being a salt of an organic acid, the alkalinity of the blood also helps increase the specific gravity of the urine. This excessive elimination of phosphates results in phosphatemia, so often seen in acute rheumatic fever and diabetes, which latter is seldom recognized and unfortunately seldom treated.

Almost identically the same state of affairs results in migraine. There is a reduced amount of urea excreted, but the phosphates are often increased in amount with resulting phosphate poverty which still further disturbs the metabolism.

Migraine can be cured in most cases, and greatly relieved in the remainder; but the treatment must be devoted to the interval between attacks. Let us first consider the treatment of the attack. When the patient feels an attack coming on he is directed to take a large dose of calcium carbonate or calcium citrate or acetate (5 to 10 grams) and to drink a large amount of heavily charged mineral water. If diuresis is known to be difficult to produce a large dose of lithium citrate is added when calcium citrate is used. Two hours later the physician injects hypodermically a grain or two of the alkaloid of caffeine. There results a large amount of concentrated urine, in which the toxic products leave the body and the attack is aborted. In some of the cases two drams (120 gr.) of citric acid in capsules was used with good effect. Full discussion of the underlying principles of this therapy will be found on page 480 of Landois' Physiology. As soon as the patient finds that the attack can be prevented there is added stimulus to enter into the treatment of the condition between attacks.

The treatment between attacks is most important. From what has been said the indications are to avoid everything that results in (1) increase of toxins (such as constipation, excessive exercise, toxin-containing and producing foods, and fatigue); (2) retention of toxins (all drugs that reduce blood-pressure and reduce the specific gravity of the urine, as alcohol, coffee, ether, chloroform, opium, distilled water; (3) mental stress and excitement,

which induce polyuria, the antithesis of healthy secretion. On the other hand the indications are for those drugs and habits which (1) increase the alkalinity of the blood which makes these toxins soluble, such as the salts of the vegetable acids, the citrates and acetates in the food together with the salicylates; some patients tolerate apples (malates) and tomatoes (oxalates) while others do not; (2) increase or produce a large amount of concentrated urine, as large amounts of concentrated water or milk; (3) favor a continuous higher blood-pressure, as iron hypodermically, nuclein hypodermically, suprarenal extract; (4) prevent phosphatemia, as by the administration of phosphates. Lack of time prevents greater detail in these particulars.

The abortive or inter-paroxysmal attacks are the rule rather than the exception. Lepois in the seventeenth century observed that the after effects vomiting and sopor might come on without headache. Periodic attacks of chilliness with pinched face, cold extremities, scotoma, wretchedness, apprehension, numbness of the extremities, or "biliousness" which clears up after vomiting should make one suspicious of an aborted attack of migraine. Attacks may occur after excitement with polyuria. Equivalents of the attacks may be found in stomach attacks, giddiness, vertigo, colic with anxiety or depression which occur at periodic intervals. During the crises there is often pupillary dilatation, in contradistinction to contraction as soon as the pain sets in.

It frequently happens that the patient suffers typical ophthalmic migraine and does not have a severe headache at any time. The severe headache is usually followed by nausea and vomiting. This nausea and vomiting is extremely valuable to the patient since it results in general relaxation and relief from spasm and is followed by profuse diuresis during which relief from toxemia occurs both in the urinary output, and the sweating and diarrhea. When a minor vasomotor crisis occurs and there is no headache, the relaxation is not so complete, sweating rarely occurs, and the relief is only partial. Thus the valuable head-

ache is avoided and the patient remains in a chronic state of toxemia. These conditions are extremely common and often unrecognized, hence untreated. It is the purpose of this paper to call attention to these minor crises, the unfortunate sufferer from which remains in a state of chronic invalidism if the real underlying condition is not recognized.

436 Metropolitan Building.

DISCUSSION.

L. E. Rupert, Florence: This paper has been very interesting to me, because I have a member of my own family who has been suffering from migraine for many years. I think the doctor is on the right track. I think unquestionably elimination has a whole lot to do with it. This member of my own family was operated on for Jackson's membrane, and the elimination has been attended to, and the headaches have materially improved. Where there were one or two or three attacks of headache every month, there is probably one in four months, and Jackson's membrane causing faulty drainage was the cause of the trouble.

While I was in New York city a few years ago Dr. Morris was working on these cases of migraine on the theory that the disturbance is due to toxins or to a toxemia from the intestines, and he was making an autogenous vaccine from the germs he found in the feces, and he told me that he was clearing up a great many cases.

O. S. Fowler, Denver: I should like to discuss this subject from the standpoint of a patient and also from the viewpoint of elimination. I myself was troubled with occasional attacks of migraine for several years, and these attacks always followed indiscretions in eating and drinking. For instance, my first attack came on following eating wienerwursts and sauerkraut, and drinking a glass or two of beer, to which I had never become accustomed, and also from loss of sleep. I think I had ten or a dozen attacks altogether, but with the attacks I had homonymous hemianopsia which would clear up with the oncoming of the headache. I was then a medical student; I consulted various doctors in a casual way in several instances, and the only advice I got was to take a dose of calomel once a week. If you have ever prescribed calomel for a patient, remember in your prayers to ask forgiveness next time you do it, because there is nothing more disagreeable.

Dr. Lazell at one time started me out right in the matter of relief from these headaches, and I have had a permanent cure. It is simply the matter of increasing the elimination, for since that time I have not had an attack.

I have been interested in these cases from the standpoint of elimination from the direction of the kidney. I have found this, that there is almost no person who drinks enough water or takes enough fluid. I dare say, if we were to ask how many glasses of water you drink in a day it would probably vary from four to seven glasses. That is not enough in my experience, and a large number of patients I see, putting the age at twenty-five, suffer more or less from auto-intoxication, not necessarily migraine but the lighter forms of migraine, and I have found that the drinking of

ten or fifteen glasses of fluid a day is more nearly the proper amount for the average-sized individual. Many of these patients can be entirely relieved as long as they take large quantities of fluid. Patients come to us with headache, vertigo, dizziness and pain, ordinarily, and they belong to the type of prolapse of some viscus, and it is found that the kidneys in most of these cases are working under bad conditions; the intestines have dropped, and the colon especially, so that it cannot empty itself thoroughly and free elimination is out of the question. I have found in a long series of these cases that the quantity of urea is nearly always very low in the twenty-four hour estimate of urea, running, as a rule, from 5 to 12 or 13 grams of urea in twenty-four hours, and the urine averages about 20 to 35 ounces, which is much too little.

In the matter of polyuria, there is a good deal of difference between a large amount of urine and polyuria. Notwithstanding the fact that there is an old saying in medicine that the amount of solids is not increased by an increase in the urinary output, I have followed it through in a number of kidney cases, and I know positively that the increased amount of urine with the intaking of fluid does increase the amount of total solids in the twenty-four-hour specimen.

C. A. Ferris, Denver: I want to confirm the remarks made by Dr. Fowler in regard to the elimination of urea through water. Being a victim of this malady (migraine) myself and having fallen under the care of Dr. Fowler and Dr. Lazell, I am able to confirm the findings which these gentlemen have given you today.

E. W. Lazell, Denver (closing): I called attention to the fact that this headache is analogous to shock; that headache is protective the same as shock. Acidosis was spoken of. After all, urea and uric acid are retained, and if there is insufficiency or disturbed nitrogenous metabolism you have acidosis; hence alkaline treatment.

News Notes

Dr. William C. Mitchell, for a number of years Denver City Bacteriologist, has been appointed Chief of the City Laboratory recently established. This gives effect to the recent decision to consolidate the laboratories under control of the city.

Deputy Health Commissioner F. R. Coffman has issued an order that, in the case of convalescent diphtheria and scarlet fever patients, permits for children to return to school shall be issued only from the health commissioner's office.

A woman having died in Denver of peritonitis following treatment at the hands of a practitioner whose name does not appear in the Denver telephone directory, Dr. Sherman Williams, acting as coroner, called a jury to consider the case, composed of the following physicians: Drs. C. A. Powers, W. A. Jayne, F. C. Buchtel, R. G. Morrison, J. W. Ames and E. F. Dean. This is said to be the first coroner's jury in Denver to be composed entirely of physicians. The verdict returned was that the patient had come by her death "As a direct result of a series of criminal operations" performed by the practitioner in question.

A Denver physician having presented a bill for \$125 for treatment of a workman who had suffered an injury to his nose which required an operation, the State Industrial Commission reduced the account to \$40.

Dr. G. F. Libby has fully recovered from his recent illness, and has resumed practice.

Dr. W. L. Davis has been made assistant pathologist for the city of Denver.

Dr. Byron B. Blotz has recently built and opened for use a hospital at Rocky Ford.

Dr. Ella Mead has been doing post-graduate work in women's and children's diseases in eastern clinics.

A day or two after the forms were closed for the January issue of Colorado Medicine the Denver medical profession lost two prominent members, namely, Dr. P. V. Carlin, who had for several days been in a serious condition as the result of a stroke of apoplexy, and Dr. Carl E. Walbrach, who had been seriously ill for some weeks. Dr. Carlin was 61 years old, Dr. Walbrach only 42.

The estate of the late Dr. P. V. Carlin, who is said at one time to have had the largest medical practice in the city of Denver, is stated to amount to not more than \$75,000.

In an address before the Intercollegiate Socialists' Society in Boulder recently, Dr. Ross W. Whitman expressed the opinion that all physicians should be employed by the state, and that in place of the present fee system, the government should pay doctors so much a year to keep people well.

Dr. R. C. Lewis, previously in the U. S. Public Health Service, has been appointed assistant professor of physiology in the University of Colorado Medical School. Dr. Lewis will be a full-time professor.

Dr. A. J. Lanza of the U. S. Public Health Service is in Denver for a few weeks with Mrs. Lanza.

The American Orthopedic Association announces the appointment of Dr. Mark H. Rogers, Boston, as editor of the American Journal of Orthopedic Surgery, the only periodical in the English language devoted to orthopedics. This journal, which has now completed thirteen volumes as a quarterly publication, will henceforth be published monthly. The new address of the publication is 126 Massachusetts Avenue, Boston.

On January 10th, too late for notice in our January issue, the staff of St. Anthony's Hospital elected the following officers for the coming year: President, Dr. F. G. McKlveen; vice president, Dr. F. M. McCartney; secretary, Dr. W. F. Matson; member of the executive committee, Dr. G. W. Miel.

Dr. F. M. French, who received his medical diploma from the medical department of Denver University at the age of 63 years, died in the early part of January, aged 76 years.

Dr. C. E. Dungan, who had practiced medicine at Holly, Colo., for four years, died suddenly of pulmonary hemorrhage on January 19th.

At the annual meeting of the staff of St. Joseph's Hospital on January 12th, 1916, the following officers were elected for the ensuing year: President, W. H. Bergtold; vice president, C. B. Lyman; secretary, R. L. Charles; executive committee, E. F. Dean, L. Freeman and H. H. Martin; training school committee, T. J. Carlin, M. D. Healy and C. E. Walker.

Dr. Robert L. Charles has taken over the equipment of Dr. C. G. Parsons, including his nitrous oxide and oxygen apparatus.

Boulder Notes.

The officers elected by the Boulder County Medical Society for the year 1916 are as follows: President, C. T. Burnett; vice president, J. A.

Matlack; secretary and treasurer, C. L. LaRue; reporter, C. L. LaRue.

The Program Committee is assigning considerable time to the review of literature, together with the report of clinical cases—which makes a very valuable and interesting program.

The regular February business meeting was deferred from February 3rd to February 10th, on account of a banquet for the university faculty which was attended by several of our members.

Dr. W. W. Yates has removed from Boulder to Niwot.

Dr. A. S. Hill of Lafayette, Colo., has petitioned for membership. Dr. Hill has recently moved from Denver to Lafayette. He was formerly a medical missionary to China.

It is the intention of the Program Committee to hold a regular meeting in Longmont instead of Boulder in the near future.

Our vice president, Dr. J. A. Matlack of Longmont, will leave soon to spend a year with the Mayos at Rochester.

Drs. Burnett and Poley are driving new Hupmobiles; Dr. O. M. Gilbert has a new Overland; Dr. Reed a new Buick six; Drs. Greene and Weber a new Overland.

Dr. C. L. LaRue recently made a trip to Illinois to see his sister, who was seriously ill.

There is prevalent a rather widespread epidemic of influenza which has proven fatal to several children in Boulder.

Samuel A. Fisk, Walter Hilliard, Louis Schultz and Geo. H. Stover.

The library has outgrown its present quarters. A very large number of volumes have been added to the already excellent collection. Patronage both on the part of local members and of the profession throughout the state shows a great increase. The Metropolitan Realty Company has made an offer to the trustees of the Medical Society to erect a new building to accommodate the ever-growing library and to afford a modern meeting hall for the society. The society endorsed the plan of the trustees.

Resolutions on the death of the late Dr. C. E. Rivers were read. Dr. Grant delivered his retiring address, "Biographical Address on Gregor Mendel and His Researches on Reproduction and Heredity."

On January 17, 1916, a special meeting was held, and committees were appointed to draft resolutions on the death of Dr. P. V. Carlin and Dr. C. E. Walbrach.

At the regular meeting on January 18, 1916, Dr. S. B. Childs, vice president, presided, Dr. Sewall being absent from the city.

The scientific program was as follows: "Rocky Mountain Spotted Fever," Dr. A. J. Campbell; "Undescended Testicle," Dr. W. M. Spitzer.

C. F. HEGNER,

Reporter.

Medical Societies

CITY AND COUNTY OF DENVER.

At the meeting of the **Medical Society of the City and County of Denver**, December 21st, 1915, Dr. W. W. Grant presiding, scientific papers were read as follows:

Subphrenic Abscess, by Dr. J. N. Hall and S. B. Childs.

Medical Literature and the Medical Library, by Dr. W. A. Jayne.

Dr. C. A. Powers presented to the Trustees of the Medical Society of the City and County of Denver the original charter of the Colorado State Medical Society.

The following applications for membership were received and held over until the next meeting: Charles J. Lowen, W. B. Maddox, Jacob L. Husman.

B. F. HEGNER,
Reporter.

At the annual meeting of the **Medical Society of the City and County of Denver**, held on January 4, 1916, the following officers were elected for the ensuing year: Henry Sewall, president; S. B. Childs, vice president; H. R. Stilwell, secretary; F. P. Gengenbach, treasurer; O. M. Shere, librarian; W. W. Grant, trustee; F. C. Buchtel, censor; delegates to the State Society: T. E. Carmody, W. A. Jayne, R. W. Arndt, D. F. Jones, D. H. Coover, H. G. Wetherill, F. W. Kenney; first alternates, A. J. Simpson, W. H. Crisp, G. K. Olmsted, A. J. Markley, F. C. Buchtel, W. M. Spitzer, S. B. Eichberg.

Reports read showed that the year had been a very successful one for the society. There was no debt, a large number of new members had been added, making the total number of members 353. Seven members died during the year—Drs. Charles H. Burnevich, F. G. Byles, J. A. Rink,

The regular meeting of the **Medical Society of the City and County of Denver** was held February 1, 1916, President Dr. Henry Sewall in the chair.

Dr. Sewall, who had recently returned from a prolonged visit in California, made a few remarks, briefly outlining a plan of work for the coming year.

Dr. Sewall's enthusiasm is refreshing and contagious. It is to be hoped that many of the members of the society will become inoculated, and give vent to their infection by being faithful in their attendance, consistent in discussion and original in their papers.

Dr. C. C. Perkins was elected to membership. Applications of Drs. C. O. Eigler, R. M. Shea and A. C. Smiley were received.

Resolutions on the death of Drs. P. V. Carlin and C. E. Walbrach were read.

The scientific program: **Studies in Some Pulmonary Infections**, W. W. Williams, M.D., and W. T. Burdick, M.D.

Personal Experiences in Serbia, W. A. Jolley, M.D., Boulder.

Demonstration of Pulmotor, Children's Hospital Committee.

The paper "Studies in Some Pulmonary Infections" was exceptionally good and was very generally discussed. Dr. Jolley's talk was interesting and enjoyable.

C. F. HEGNER,
Reporter.

LARIMER COUNTY.

A special meeting of the **Larimer County Medical Society** for election, etc., was held in the Y. M. C. A. building at Fort Collins, January 12, 1916. In the absence of the president, Dr. Kickland, the vice president, Dr. Taylor, presided. Those present were Drs. Dale, Halley, Replogle, Taylor, Sadler, Norton, Toel and Stuver. The application of Dr. Florence Fezer was presented,

and the president appointed a committee consisting of Drs. Dale, Halley and Sadler to act upon it; they returned a unanimously favorable report and Dr. Fezer was elected a member of the society. It was resolved that the secretary order a copy of the bound volume of the State Medical Society Transactions. It was moved by Dr. Halley, seconded by Dr. Replogle, that the Society's dues for the current year be fixed at \$3; carried.

The Society then proceeded to the election of officers for the ensuing year, with the following result: E. Stuver, president; B. F. Replogle, vice president; T. C. Taylor, secretary; J. E. Dale, treasurer; S. C. Halley, censor for three years. The Board of Censors now consists of Drs. McHugh, 1916; Dr. Hoel, 1917; Dr. Halley, 1918. Dr. McHugh is delegate for 1916; Dr. Kickland, first alternate, and Dr. Norton, second alternate.

T. C. TAYLOR,
Secretary.

A regular meeting of the Larimer County Medical Society was held in the Y. M. C. A. building at Fort Collins, February 2, 1915. Present, Drs. Rew, Fezer, Kickland, Stuver and Taylor.

Dr. Kickland reported a case of gastric ulcer having some features of unusual interest.

Dr. Stuver read an interesting paper on the "Dissemination of Disease by Insect Pests."

A general discussion followed bearing upon the epidemic of measles which holds this territory in its grip, and has shown many cases of unusual severity.

T. C. TAYLOR,
Secretary.

PUEBLO COUNTY.

The annual meeting of the Pueblo County Medical Society was held in the society hall, January 4, 1916, President Taylor presiding.

Dr. Taylor presented the president's address on "Sociologic Medicine."

Dr. Jos. N. Snedec was elected to membership.

The society proceeded to the election of officers for 1916, which resulted as follows: President, Dr. C. V. Marmaduke; censor, Dr. W. P. Hunnicutt; delegates, I. Hubert Work; first alternate, W. F. Singer; second alternate, A. F. Fugard; II, T. A. Stoddard; first alternate, W. O. Patterson; second alternate, F. J. Peirce; librarian, Wilbur Lucas.

The secretary was instructed to extend in writing a vote of thanks to the Miller-Hohl Drug Co. for cigars and cigarettes they presented to the society this evening. Dr. C. V. Marmaduke, the newly elected president, was then conducted to the chair.

J. H. WOODBRIDGE,
Secretary.

The Pueblo County Medical Society was called to order in regular session by President Marmaduke, January 18, 1916.

The president appointed the following committees:

Program—J. H. Woodbridge, T. A. Stoddard, M. S. Middelkamp.

Membership—R. C. Robe, J. J. Pattee, R. R. Taylor.

Publication and Library—W. W. Bulette, W. E. Buck, C. W. Maynard.

Legislation—F. E. Wallace, W. F. Singer, Luke MacLean.

Entertainment—D. E. Hoag, Philip Work, F. J. Peirce.

Dr. F. E. Wallace presented a paper on "Dis-eased Antra," with three clinical cases. The photographs, skull and demonstration of the cases by transillumination made this subject a very interesting and instructive one, even to the general practitioner.

A motion was made and carried that the president appoint a committee to consider the matter of establishing a clinic and to submit a report to the secretary.

J. H. WOODBRIDGE,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

An interesting meeting of the Colorado Ophthalmological Society took place in Colorado Springs at the office of Dr. E. R. Neepor, January 15, 1916.

Dr. Neepor presented patients showing respectively diabetic retinitis, corneal ulcer and glaucoma.

Dr. A. C. Magruder exhibited a case of choked disc, one of eye injury and one with paralysis of the ocular muscles of the right eye.

Dr. W. A. Sedwick reported at length a case of iridocyclitis, the cause of which had long been obscure, but which was ultimately found to be due to pyorrhea, as was conclusively proven by its speedy recovery following extraction of the offending teeth.

E. T. BOYD,
Secretary.

DENVER MEDICAL SCIENCE CLUB.

The Medical Science Club met at the offices of Drs. Carmody and Finnoff on January 14th, 1916. Attendance, sixteen.

Dr. Blickensderfer related his experience at the Mayo Clinic, with especial reference to gastric ulcer.

Dr. Carmody showed a case of malignant disease of the tongue operated on by him, in which the left half was removed, together with cervical glands on each side. No recurrence to date.

Dr. Crisp reported a case of profuse lachrymation entirely relieved by refraction, and spoke of the conservative use of surgery especially with regard to the lachrymal sac.

Dr. Davis showed a case of adenoma of the prostate, undescended testicle, and persistent staphylococcal infection of the bladder.

Dr. Fowler reported a case of unilateral hernia and one of sliding hernia.

H. G. GARWOOD,
Secretary.

The Medical Science Club met at the offices of Drs. Carmody and Finnoff on the evening of January 28th, 1916; Dr. Fowler in the chair. Attendance, fourteen.

Dr. J. A. Philpott was elected to membership.

Dr. Ferris showed an obstetrical vectis and demonstrated the method of use. He also showed a retractor of his own make used in perineal repair, doing away with the services of an assistant.

Dr. Lyons showed a specimen of prostate and several hundred calcium oxalate bladder stones, removed under local anesthesia from a patient aged 68 years.

Dr. Love reported two cases of diabetes mellitus treated by the Allen starvation method.

Dr. Lingenfelter reported a case of scarlet fever in a boy who had had three previous attacks.

Dr. Lazell reported a woman with imperative

ideas, treated by the Freud psycho-analysis method.

H. G. GARWOOD,
Secretary.

Book Reviews

A Text-Book of Physiology: For Medical Students and Physicians. By William H. Howell, Ph.D., M.D., Professor of Physiology, Johns Hopkins University, Baltimore. Sixth Edition thoroughly revised. Octavo of 1043 pages, 305 illustrations. Philadelphia and London: W. B. Saunders Company, 1915. Cloth, \$4.00 net; half Morocco, \$5.50 net.

The practical surgeon or physician today who endeavors to keep abreast of the front rank in his profession must be, if not a physiologist, at least virtually familiar with certain fields of physiological research. To such an one the work here noticed must prove a boon. Professor Howell is himself an original investigator of enviable fame, and few have so thorough an understanding of general physiology as he.

An excellent teacher and a lucid writer, he has shown good judgment in the choice of material which would make his book of value at once to the physiologist and to the man of medicine.

Particularly welcome to the student of modern medicine must be Howell's clear descriptions of physico-chemical laws and processes as applied to vital phenomena. The specialists in this field usually write far over the head of the general reader.

The book may be recommended as an epitome of advanced physiological knowledge which does not demand for its understanding that one should have had his technical training within the past year or two.

H. S.

Bone-Graft Surgery. By Fred H. Albee, M.D., F.A.C.S., Professor of Orthopedic Surgery at the New York Post-Graduate Medical School and the University of Vermont. Octavo volume of 417 pages with 332 illustrations, 3 of them in colors. Philadelphia and London: W. B. Saunders Company, 1915. Cloth, \$6.00 net; half Morocco, \$7.50 net.

Albee presents a more or less new field in orthopedic surgery, and injects into his writings a most pronounced optimism for the bone-graft in repair of numerous bone defects, acquired and congenital.

He describes first his successful bone inlay operation for spinal deformity in tuberculosis, in which he places a splint from the tibia into a groove made by splitting longitudinally the posterior spinous processes involved in the kyphosis. Following this operation he demands only five or six weeks of post-operative fixation in bed, after which time the patient is up and entirely free of apparatus, a most radical change from the treatment of two or three years with plaster casts and braces. Other spinal lesions treated by bone-graft include scoliosis, where he applies a tibial splint to the denuded tips of the transverse processes on the convex side of the lateral spinal curvature. He does not give so much promise to this particular operation.

In a long chapter on fractures, he vigorously condemns the use of foreign material, such as Lane's plates and the Parkhill clamp, but makes a strong plea for the more frequent use of the open operation and the bone splint. Here he

uses the Hawley table for traction, apposes the ends of the fractured fragments, saws out an inlay from one of the fragments, usually the proximal, and slides it into a groove one-half its length, which has been prepared for it in the distal fragment. Bone-graft dowel pegs may be used for further fixation if needed. In the fracture of the neck of the femur he uses "a strong autogenous bone-peg accurately fitted into a hole drilled longitudinally through the neck, with the fragments in good position."

His operation for remodelling the hip joint in cases of recurrent paralytic and congenital dislocation of the femoral head promises much, for such a condition has never yielded to treatment. The operation consists (after preliminary traction) in first exposing the joint capsule by sawing off and turning upward the trochanteric tip, then incising, above the capsule, the bony acetabular rim in a semi-circular line in the postero-superior surface, and prying downward and outward this segment, which thus deepens the acetabulum sufficiently to offer an obstruction to any further displacement. The bone gap thus produced above the rim segment is filled in by a tibial section, and the relaxed capsule is reefed.

Other chapters describe the arthrodesis of various joints in tuberculosis, osteoarthritis and paralytic conditions. Congenital defects such as absent fibula and club foot are dealt with.

The book is excellently written, the operations are clearly described and the illustrations profuse, but occasionally a photograph designed to show a condition after treatment is not taken under quite the same conditions as the photograph before the operation. Thus in a scoliosis case, the first photo shows the boy sitting without any support, while the second photo shows him supported by an attendant.

R. G. P.

Post-Mortem Examinations. By William S. Wadsworth, M.D., Coroner's Physician of Philadelphia. Octavo volume of 598 pages with 304 original illustrations. Philadelphia and London: W. B. Saunders Company, 1915. Cloth, \$6 net; half Morocco, \$7.50 net.

Special works in English exclusively devoted to autopsies are rather scarce, and a new arrival in this field is therefore to be welcomed. The subject is growing in importance as the demand for post-mortem examination increases coincidentally with an awakening of the scientific spirit in the profession.

This may not be the occasion to emphasize the deplorable status of the autopsy problem here as compared with conditions abroad. We are still in the stone age in this respect, considering the apathy of the practitioner and the hostility of the public to the performance of post-mortem examinations. A systematic propaganda in the profession and continued educational efforts among the laity must be carried on to attain the ideal of "posting" every death.

Dr. Wadsworth's book is original in many respects. He properly criticizes the tendency to a machine-like performance of all autopsies after the same pattern. This objection, voiced years ago by Zenker, is quite justified, as the relationships of organs are disturbed and important findings may be overlooked by too religious an obedience to the Virchow technic.

In defense of a routine procedure it may be stated that for the average inexperienced operator a set of rules is better than unbridled license in the hands of the few experts. Hence the usefulness at times of printed blanks for the guidance of those unaccustomed to post-mortem work.

While medico-legal cases should be entrusted only to competent pathologists, every clinician should be encouraged to check up his clinical findings by doing his own post-mortem examinations when he cannot secure the services of the specialist.

The originality of the book is clearly evident in almost every page, where the impress of the author is plainly stamped, sometimes, it seems, beyond the point of a proper sense of modesty. The extensive experience of the author as coroner's physician of Philadelphia undoubtedly lends authority to his statements. Yet there is altogether too much moralizing, with philosophic dispositions and irrelevant comments which detract somewhat from the value of the work.

There are numerous illustrations throughout the book in elucidation of the text, mostly original photographs. For reproduction of the instruments and apparatus they serve the purpose most excellently, but for giving the reader a clear picture of pathologic changes, especially color and light effects, they are very inadequate, as much detail is lost in the half-tone process.

Stereoscopic photographs obviate this difficulty, but are of course inapplicable in a text-book. The best works on pathology therefore use colored drawings.

A word may be said as to the price of the book. For every physician to be encouraged to own a work on post-mortem examinations the price should be set at a reasonable figure. Six dollars is a prohibitive amount to many practitioners. In spite of the above few deficiencies the work of Wadsworth contains many valuable hints, both in the technic of the performance of autopsies and as to the interpretation of pathologic changes.

P. H.

Report on the Medico-Military Aspects of the European War. By Surgeon A. M. Fauntleroy, U. S. N. Issued by the Government Printing Office under the direction of the Bureau of Medicine and Surgery, Navy Department.

This work comprises observations taken behind the allied armies in France and contains four parts dealing respectively with military organization and equipment, organization for the transportation and care of the sick and wounded, base hospital work and general field conditions. An appendix explanatory of French army rations and the French "75" is highly interesting and instructive.

The author has dealt with such a vast subject in a brilliant manner, sifting the wheat from the chaff, as it were, and arriving at real truths and lessons to be gleaned from a war of such magnitude and horror. Even a casual glance through the one hundred and fifty-odd pages of the book impresses one with the wealth of material contained and the extensive illustrations are clear, fascinating and horribly real. To anyone not particularly interested in this branch of service, the general idea gained in a review of the contents is well worth the while given, in order to familiarize himself with that most important branch of all the war's aspects, namely, the conservation and care of the soldier's health and post-combative capabilities. Much credit is due to Surgeon Fauntleroy for the data given to medical literature through this volume, not only as a means of instruction, but also in bringing closer to us, who are distant from the actual warring countries, the systematized perfection of medical usefulness. At the close of his book Dr. Fauntleroy devotes two pages to eulogizing that wonderful brain of the French army, General Joseph Jacques

Joffre, on whom more than any other one figure in the present war attention has been centered, on account of the almost impossible barriers he has met and successfully overcome.

The writer of this brief review recommends this volume highly as an instructive and valuable addition to both the medical and general library.

R. H.

Practical Medicine Series—Nervous and Mental Diseases. Edited by Hugh T. Patrick, M.D., and Peter Basso, M.D. Price, \$1.35. 240 pages. Chicago: The Year Book Publishers. 1915.

This is a very interesting volume and maintains the standard set in the past by the editors of the series. The discussion of the nervous diseases, functional as well as traumatic, occurring among the soldiers in the European war, and the abstracts from the literature of the syphilitic diseases of the nervous system, the cerebro-spinal fluid and psycho-analysis are especially valuable and interesting. In connection with the war the observations of Oppenheim and other distinguished neurologists are quoted. Oppenheim says that contrary to our previous ideas, we must be very slow in making a diagnosis of complete transverse lesion of the cord, as none of the accepted signs of this lesion are trustworthy. Cases are cited.

Twenty pages are devoted to syphilitic diseases of the nervous system and their treatment. All the methods of intraspinal treatment are discussed and the arguments for and against each are given.

Our knowledge of the cerebro-spinal fluid and diseases of the meninges is well summed up. Some space is given to L. Pierce Clark's views on epilepsy, based on psycho-analysis. Clark says that the epileptic fit is a striving for the expression of the libidinous energies in the unconscious. He also says that the epileptic's desire is to return to the mother's womb. "The state of oneness desired is actually to be in the mother, and the physical union of the intrauterine life is really sought."

In the section on mental diseases, a good deal of space is given to mental defect and delinquency. We also have a great deal about insanity and the war, expert testimony and a conservative statement by August Hoch of the Freudian theories as applied to insanity.

The above are only a few of the interesting subjects discussed and brought down to date. The book should be of value to both neurologist and general practitioner.

C. L. P.

The Clinics of John B. Murphy, M. D. December. W. B. Saunders Company.

In this number is taken up at length the discussion of congenital luxation of the hip. In his method, Murphy emphasizes the pre-operative use of Buck's extension for at least three weeks, for the purpose of stretching principally the adductors, which are always the greatest hindrance to immediate reduction. He describes the use of special apparatus such as traction tables, pointing out the alleged dangers of fracture, paralysis and occasional rupture of the perineum when too strenuous methods are adopted.

In a talk on joint-infections, it is stated that acute arthritis is always lesions of infection rather than of metabolism, though the latter may influence the course of the disease. A metastatic involvement of a joint initiated by a chill necessarily means pyemia, and demands immediate and vigorous treatment to prevent ankylosis, which follows when the bacteria, first lodged in the sub-

synovial layer of the joint, rupture through into the cavity and form pus. Murphy's routine treatment is to apply Buck's extension to relieve the intra-articular pressure, then to aspirate and inject a two per cent solution of formalin in glycerine. He re-aspirates if necessary to keep down the capsule tension. Meanwhile he pushes the vaccine from the beginning, autogenous vaccine if possible, otherwise a stock vaccine.

R. G. P.

Minor Publications Received. (1) The Rockefeller Foundation annual report, 1913-1914, second edition. The Rockefeller Foundation, 61 Broadway, New York. (2) A brief bibliography of books in English, Spanish and Portuguese relating to the Republics commonly called Latin American, with comments. By Peter H. Goldsmith, director of the Pan-American division of the American Association for International Conciliation. New York: The MacMillan Company, 1915. (3) Trachoma, A Menace to America. National Committee for the Prevention of Blindness, 130 E. Twenty-second street, New York (a popular presentation of the subject for the education of the layman as to the prevalence of this disease).

THE COLORADO STATE MEDICAL SOCIETY.

(Incorporated November 1, 1888.)

The Next Meeting Will Be Held in Glenwood Springs,—September 5, 6 and 7, 1916.

OFFICERS, 1915-1916.

President, John R. Espey, Trinidad.

Vice Presidents, 1st, C. E. Tennant, Denver; 2nd, J. U. Sickenberger, Grand Junction; 3rd, W. A. Kickland, Fort Collins; 4th, H. W. Averill, Evans.

Secretary, Crum Epler, Pope Block, Pueblo.

Treasurer, W. A. Sedwick, Metropolitan Building, Denver.

BOARD OF COUNCILLORS.

Term Expires, 1916—A. G. Taylor, Grand Junction; J. C. Chipman, Sterling; 1917—Horace G. Wetherill, Denver; A. R. Pollock, Monte Vista. 1918—J. W. Ames, Denver; E. A. Elder, Pueblo. 1919—J. A. Matlack, Longmont; Edgar Hadley, Telluride. 1920—Will H. Swan, Colorado Springs; H. S. Henderson, Grand Junction.

DELEGATES TO AMERICAN MEDICAL ASS'N.

Term Expires, 1916—H. R. McGraw, Denver; Alternate, F. R. Spencer, Boulder. 1917—L. H. McKinnie, Colorado Springs; Alternate, George A. Moleen, Denver.

COMMITTEES FOR 1915-16.

Scientific Work, H. A. Black, Pueblo; W. A. Jayne, Denver; Crum Epler, Pueblo; W. H. Crisp, Denver.

Credentials, Crum Epler, Pueblo; W. H. Halley, Rouse; George A. Moleen, Denver.

Public Policy and Legislation, W. H. Sharpley, Denver; Geo. B. Packard, Denver; J. W. Ames, Denver; D. A. Strickler, Denver; C. F. Wilkin, Laporte; L. H. McKinnie, Colorado Springs; Fred Schermerhorn, Montrose.

Publication, A. J. Markley, Denver, Chairman (1916); L. B. Lockard, Denver (1917); Melville Black, Denver (1918).

Auditing, O. M. Gilbert, Boulder; H. A. Garwood, Denver; E. L. Rupert, Florence.

Necrology, C. A. Ringle, Greeley; J. B. Davis, Denver; H. Goodloe, Canon City.

Medical Education, Frost C. Buchtel (1916); Will H. Swan, Colorado Springs (1917); George H. Cattermole, Boulder (1918).

Health and Public Instruction, R. W. Corwin, Pueblo; W. T. Little, Canon City; H. A. Smith, Delta.

Committee to Cooperate with State Pharmacal Association, C. E. Edson, Denver; J. C. Chipman, Sterling; E. D. Burkhard, Delagua.

Committee of Arrangements for 1916 Meeting, W. W. Crook, W. W. Frank, and J. P. Riddile, Glenwood Springs.

Committee to Revise By-Laws, W. A. Jayne, Denver; L. H. McKinnie, Colorado Springs; H. A. Black, Pueblo.

Workmen's Compensation Acts, H. R. McGraw, Denver; S. D. Van Meter, Denver; D. P. Mayhew, Colorado Springs.

First Aid, Aubrey H. Williams, Denver; F. H. McNaught, Denver; C. B. Lyman, Denver.

Study and Control of Cancer, T. A. Stoddard, Pueblo; J. G. Hughes, Greeley; T. M. Burns, Denver.

Medical Defense, H. G. Wetherill, Denver; M. J. Keeney, Pueblo; Crum Epler, Pueblo.

Constituent Societies and Times of Meeting and Secretaries.

Bent County, first Tuesday of each month; P. A. Leedham, Las Animas.

Boulder County, every Thursday; C. L. La Rue, Boulder.

Crowley County, second Tuesday of each month; E. O. McCleary, Ordway.

Delta County, last Friday of each month; W. Scott Cleland, Delta.

Denver County, first and third Tuesday of each month; H. R. Stilwell, Denver.

El Paso County, second Wednesday of each month; G. B. Gilmore, Colorado City.

Fremont County, fourth Monday of January, March, May, July, September and November; R. C. Adkinson, Florence.

Garfield County, second Thursday of each month; W. W. Frank, Glenwood Springs.

Huerfano County, P. G. Mathews, Walsenburg.

Lake County, first and third Thursday of each month; E. A. Whitmore, Leadville.

Larimer County, first Wednesday of each month; C. C. Taylor, Fort Collins.

Las Animas County, first Friday of each month; A. J. Chisholm, Trinidad.

Mesa County, first Tuesday of each month; R. B. Harrington, Grand Junction.

Montrose County, first Thursday of each month; S. H. Bell, Montrose.

Morgan County, E. E. Evans, Fort Morgan.

Northeast Colorado; N. Eugenia Barney, Sterling.

Otero County, second Tuesday of each month; R. S. Johnson, La Junta.

Prowers County, first Tuesday of each quarter; F. Milton Friend, Lamar.

Pueblo County, first and third Tuesday of each month; J. H. Woodbridge, Pueblo.

Routt County; H. C. Dodge, Steamboat Springs.

San Juan County; F. W. E. Henkle, Silverton.

San Luis Valley; L. L. Herriman, Alamosa.

Teller County; Thos. A. McIntyre, Cripple Creek.

Tri-County; C. W. Merrill, Burlington.

Weld County, first Monday of each month; J. W. Lehan, Greeley.

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Monday, April 3, 1916 **Monday, May 1, 1916**

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COLORADO MEDICINE

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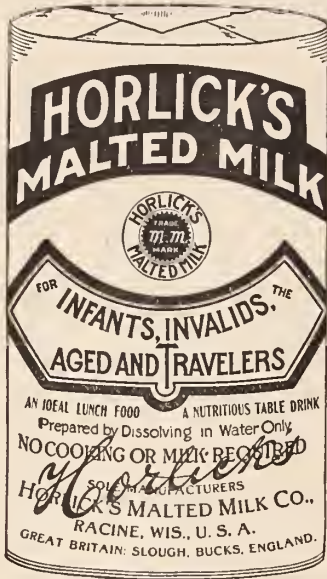
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THE 1916 PROGRAM.

THE SCIENTIFIC COMMITTEE OF THE COLORADO STATE MEDICAL SOCIETY DESIRES TO REMIND ALL MEMBERS OF THE NEXT ANNUAL MEETING TO BE HELD AT GLENWOOD SPRINGS, SEPTEMBER 5TH, 6TH, AND 7TH; AND TO NOTIFY THOSE WHO DESIRE TO READ PAPERS TO SEND THEIR NAMES AND THE TITLES OF THEIR PAPERS TO THE SECRETARY BEFORE APRIL 15TH. ABSTRACTS OF PAPERS TO BE READ MUST BE RECEIVED BY THE SECRETARY NOT LATER THAN JUNE 1ST. THE NAMES OF APPLICANTS FOR PLACES ON THE PROGRAM WILL BE FILED IN THE ORDER IN WHICH THEY ARE RECEIVED, AND THOSE FURNISHING THEIR TITLES AND ABSTRACTS WITHIN THE PROPER TIME WILL BE GIVEN PLACES UNTIL THE LIST IS FILLED.

Editorial Comment

A FEDERAL TUBERCULOSIS BILL.

a. Against the bill.

(NOTE.—The following statement expresses the views of the Denver Bureau of Charity and Correction, through the Bureau's executive secretary. On the ground that it is unjust in the placing of the local financial burden, the Medical Society of the City and County of Denver has decided to express itself in opposition to the bill.)

Bill H. R. 8352, introduced by Mr. Kent of California, provides that the federal gov-

ernment may give aid to states in caring for non-resident indigent tuberculous persons, by paying an amount not exceeding 75 cents per person per diem under given conditions. This bill if passed into law will very greatly increase and not diminish the heavy and unjust burdens which fall upon our western and southwestern communities through the influx of destitute tuberculous people from other parts of the country.

Section 1 provides that the persons to be benefited by this act must be "not legal residents of the states in which they are temporarily located". The benefits of the law may be secured if the state in which such indigent tuberculous patient is admitted to a hospital or sanitarium for treatment shall pay a sum not less than that paid by the federal government.

But if a man who is a legal resident of the state of New York comes to Denver on account of tuberculosis, why should the state of Colorado pay 75 cents a day for his care, even if the United States government will add another 75 cents a day? The law should seek to place the burden upon the state from which the tuberculous patient came, and not upon the state to which he goes, and in which, as the bill itself sets forth, he has no legal claim as a citizen. If the patient has no legal residence in the state the burden should be fixed upon the state in which he last had legal residence, or possibly upon the state in which the disease which is the cause of his dependency was acquired.

A second defect of the bill is that it seems to regard the patient as a separate problem by himself. A heavy, and perhaps the heaviest, part of the economic problem of tuberculosis is not the care of the patient but

of the family dependent upon him. Denver is providing mothers' pensions for widows with young children whose fathers came to Colorado for their health, perhaps never had an actual independence here, and finally died of the disease that brought them hither. The burden of pensions to the wife and children is likely to assume larger proportions than the burden of sanitarium care for the breadwinners.

Section 2 provides that the benefit of this law "will be granted only in the case of indigent patients who did not themselves leave in order to receive benefits under this act". Such a condition could never be proved or disproved during life. And why should people not go wherever they think the climate is best for them, if in addition, the government will help them to get the best of care there, while it will do nothing for them if they remain at home?

In drawing this bill Mr. Kent apparently had in mind only the unmarried, wandering tuberculous tramp—a numerous and troublesome problem in himself, but by no means the whole nor the most difficult part of the greater problem. The private charities and the public relief department in Denver are distracted with the care of ex-patients of tuberculosis hospitals who are still unable to be fully self-supporting, who could have such help as they need if they would go back to their former homes, but who absolutely refuse to do so.

There can be little question that tuberculous people would be encouraged by the proposed law to flock in even larger numbers, often with dependent families, to those parts of the country which are regarded as having the best climatic conditions.

In the writer's judgment the only kind of federal legislation which can be helpful must first of all fix clearly the burden of care upon the state in which it shall be determined that the patient and his family have a just and proper claim. Furthermore, in the case of patients needing prolonged financial assistance, the lapse of time, and the resulting acquirement of rights of citizenship in the state to which the patient goes, should not render it possible for his home state to escape responsibility for his further support.

There are said to be a million tuberculous

people in this country. Under Mr. Kent's bill, for each one who will come hoping for government benefit, the state to whom he has never contributed anything in citizenship is expected to pay 75 cents a day.

GERTRUDE VAILE,

Executive Secretary,

Denver Bureau of Charity and Correction.

b. For the bill.

The Kent bill, now before Congress, "to standardize the treatment of tuberculosis", etc., is important as a recognition that the tuberculosis problem cannot be solved by local authorities. It also offers assistance from the national treasury to states and institutions that have heretofore had no assistance whatever in dealing with the problem of immigrant tuberculosis.

The view that it is likely to increase the removal of tuberculous people to a relatively favorable climate seems well founded. But on the other hand to fix full financial responsibility on states from which such people incline to remove, will check the seeking for a favorable climate. It can be confidently predicted that such states will not be inclined to spend their funds outside their own borders.

For states like Colorado, which the tuberculous invalid seeks for their climate, a problem might be raised regarding the conditions under which the proposed assistance should be accepted. But every state or institution would be free to accept or reject such assistance, and all that it implied.

A point not to be lost sight of is the proposed inspection and supervision of hospitals and sanatoria. There is a great need for the effective supervision and rating of hospitals, and for the standardizing of their methods. This has been forced on the attention of those who desire to include a hospital year in the general course of medical study. It may be an important part of the work of a National Department of Public Health. It is of some significance to find this need recognized in proposed legislation.

It is to be hoped that the bill now before Congress can be so amended as to make it more effective and satisfactory before it is finally passed. But we must recognize that it does attempt to do some things that need to be done.

E. J.

HAVE YOUR DUES BEEN PAID?

Chapter XI of the Constitution and By-laws of the Colorado State Medical Society provides that "on or before the first day of April of each fiscal year the secretary of each constituent society must forward to the secretary of this society the amount of the annual assessment of the society for the ensuing year, together with the roster of members in good standing. . . . Any member who is delinquent in his or her dues on the first of April of any year . . . shall no longer continue to be a member of this society, and it shall be the duty of the secretary to drop the name from the roll of membership and cause the discontinuance of Colorado Medicine."

Failure to pay the annual dues with reasonable promptness is each year responsible for a great deal of avoidable and unnecessary trouble to the officers of state and local societies. Delayed payment of dues is in a great proportion of cases caused wholly or chiefly by carelessness. It is urged that all members who have not yet taken this necessary step in support of their medical organization will at once do so. The names of those delinquent will be stricken from the mailing list for Colorado Medicine, and the representation of local societies in the House of Delegates at the 1916 meeting will also be affected by the number of those who are careless in this matter.

INVALIDISM AND VITALITY.

For a modest and unselfish man to write the story of his own life in such a way that without a suggestion of egotism it glows with his personality and enthuses the reader with joy in its successes, is a rare accomplishment. Such a triumph must be accorded to the last piece of work done by Edward Livingston Trudeau.*

It is a fitting and crowning work; for it not only tells the story of a great man's simple life, but it gives us the history of one of the greatest medical and philanthropic

advances of the present generation. The whole period, from the discovery of the tubercle bacillus to the full establishment of the sanatorium care of the tuberculous, is covered by Dr. Trudeau's medical career; and in this work of pure and applied sciences alike he played, so far as this country is concerned, the chief part.

Considered as a biography alone, or as a contribution to medical history, the volume is an important one. As an exhilarating lesson in the force of character—of the weight of spirit over body—it is even more impressive to the reader; and for this good alone we owe Dr. Trudeau an added debt.

A lusty, buoyant life was seemingly cut off at its brilliant start, condemned by all the knowledge of the day to an inevitable and early death. Yet there was within the frail body, which spent its remaining years in a constant fight against physical infirmity and suffering, such an unquenchable fire of vitality, such an indomitable will, such a spirit of unquestioning optimism, that alone in the wilderness of forest he became the recognized leader in American phthisiology, and the founder of the sanatorium method in this country. For over forty years this spirit fought the invalidism of chronic tuberculosis. Its triumphs are now a glorious part of the heritage of American medicine, and its lessons an inspiration to pass on to succeeding generations of medical students and practitioners.

Read as a clinical lesson in the common route of infection, in the slow, then unsuspected, but now obvious, onset of symptoms, and in the staggering realization of the true nature of the infection, the story is graphic in the extreme. As a lesson in cheerfulness, in persistent industry under almost every discouragement, it is very inspiring. The glimpses of a keen, fine sportsman's instinct are enlivening. The quiet, almost unmentioned, evidences of a deep religious faith hint at one source of sustaining strength; and the moral and spiritual support of an ideal married life is unmistakable on every page.

To rehearse the details of Dr. Trudeau's life is here unnecessary. To quote the interesting passages would be to print the entire

*An Autobiography by Edward Livingston Trudeau, M.D.; illustrated, Lea and Febiger, Philadelphia and New York.

volume. It is to be hoped that every member of the Colorado State Medical Society will read this remarkable autobiography.

THE PROFESSIONAL ABORTIONIST.

In the higher animals, God or evolution, or both, have ordained that procreation shall be carried out by means of a series of physiologic events, the culmination of which is, at least among the civilized of the human species, a distinctly exacting ordeal. In all ages, perhaps, prospective mothers have secretly or openly feared the travail which was before them; and it can hardly be doubted that the intentional production of abortion is as old as civilization itself. Religion and the laws of the community have stigmatized and penalized the act; but every obstetrician, whether specialist or general practitioner, has seen instances of its performance by the pregnant woman herself, and in a great many of such instances the physician has hardly felt it his duty to point the finger of accusation, however much at heart and in principle he disapproved of what had been done.

The mortality of self-induced abortion is probably much greater than that of normal labor. Yet it is surprising, especially when we consider how ignorant of the principles of asepsis the average woman is, that so vast a majority of self-aborted patients escape scot-free. The reason may be found largely in the fact that many of them consult their regular physician in time to be protected against the worst consequences of their action. The plight of the woman who contracts with an unethical practitioner for the interruption of her pregnancy is commonly far more serious. The operation in this case is likely to be done with a minimum of respect for the surgical principles of cleanliness. The knowledge that the relation between physician and patient under these circumstances is an illegal one deters the latter from promptly obtaining the right kind of assistance when trouble develops, and the man or woman who was uncleanly in first inducing the abortion will usually be just as dirty in his further conduct of the case.

The individual who makes a practice of

causing abortions for hire is one of the most contemptible creatures on the face of the earth. Unfortunately, it is seldom possible to obtain a conviction against one of these people in a court of law, and it is probably true that the worst offenders are those who, by reason of their experience and cunning, are least exposed to the risk of legal correction. It is therefore the more desirable that the medical profession on the one hand and the public on the other should become interested in the desirability of exterminating these human vermin. This process of education will unquestionably be aided by the custom which Dr. Sherman Williams, Denver's deputy coroner, has adopted in three recent inquests on cases of death following criminal abortion, namely, the summoning of juries composed of physicians. Without considering the general question of intelligence and education in jurors, no one can dispute that medical men are immensely better qualified to understand the technical matters brought up at these inquests than is the average jurymen. It seems moreover not inappropriate that groups of medical men should be willing to help in this way to purge their profession of the stigma which the licensed abortionist brings upon it. Dr. Williams is to be congratulated upon the innovation, and his efforts are worthy of both support and success.

VITAMINES IN BULK.

The remarkable advance in our knowledge of the etiological factors involved in the causation of the so-called deficiency diseases, beri-beri and pellagra, has stimulated deep interest in the character of the essential nutritional elements grouped under the name of vitamins. Enough is already known to warrant the inclusion of these bodies among the primary food stuffs. The work of Goldberger, in his comprehensive pellagra investigations, would seem to show that the vitamins are fairly well distributed among the ordinary food products, but in such small amounts that their isolation and identification must be extremely difficult. An ordinary mixed diet doubtless contains ample quantities for the conduct of normal metabolism; a diet limited to one or

two substances naturally poor in vitamins would, on the contrary, promptly arouse manifestations of disease, as has been so clearly established in the experimental production of polyneuritis in fowls.

With the idea of developing a method which would yield a concentrated product of these obscure compounds, for use in the prevention and treatment of deficiency diseases, Mr. Atherton Seidell, Technical Assistant in the U. S. Hygienic Laboratory, has recently concluded a series of experiments which promise much for the clinician. Among the various substances known to be rich in vitamins, brewer's yeast is, at present, the most easily obtainable. It appears that in most establishments the bottom yeast remaining after each brew is thrown away. Seidell secured a large quantity of this waste product, expressed the beer with a hydraulic press and exposed the dry cake in enamelware vessels to a temperature of 37.5° C. for forty-eight hours. On completion of this autolysis, the material has the consistency of thick soup. After cooling, the liquid is filtered, the filtrate amounting to about fifty per cent of the total weight. Experiments with this latter solution on pigeons fed exclusively on polished rice, showed that the administration of 1 cc., on alternate days, prevented the onset of polyneuritis for an indefinite period, while among pigeons untreated, loss of weight began in five days and death ensued in about twenty days. As the dosage for human beings, however, would approach 200 cc., a very considerable concentration of the yeast filtrate was essential. The method devised by Prof. John Uri Lloyd of Cincinnati for the isolation of alkaloids from complex mixtures by the use of fuller's earth was employed with the happiest results. A large quantity of hydrous aluminum silicate was provided and used as an absorptive agent, and the resulting compound was standardized and successfully used both as a preventive and curative measure in the dosage of 0.05 gram for pigeons. On the basis of sixty kilos. as the weight of a man, this would represent a human dose of 10 grams of the solid on alternate days, or 5 grams per day. The material prepared by Seidell is taste-

less and odorless, and absolutely inert, aside from the vitamins contained. Certainly the results obtained call for an exhaustive exhibition in human cases. J. W. A.

SMOKE.

The people of Denver take a justifiable pride in the beauty and natural advantages of their city and are fond of calling attention to her salubrious climate, constant sunshine, invigorating air and snow-capped mountains. Not being a commercial city and having no manufactories to speak of, these natural advantages are her main asset.

A great deal of money has been spent in beautifying the city, on parks, boulevards, the civic center, handsome buildings and places of vantage to view the mountains. The health seekers, especially the tuberculous, are invited here to enjoy these blessings, to bask in the sunshine, breathe the ozone-laden air and regain health.

Anyone visiting Denver during the recent cold spell or even later during the warmer weather would have found some of these allurements conspicuous by their absence. Wandering through the city, he would breathe a mixture of bituminous smoke and air with considerable carbon monoxide. His sunshine would come to him filtered through smoke. On arriving at home perhaps he would have to remove a flake of soot from his face or linen. If he should go to City Park or Cheesman Park to view the snowy summits of the Rockies he would be likely to see them, if at all, "as through a glass darkly". The city itself would appear enveloped in a murky haze. When people say our climate is changing they probably mean that it is getting more smoky each year.

It is a matter of common knowledge that smoke means imperfect combustion and that imperfect combustion means carbon monoxide passing into the atmosphere. Carbon monoxide is a deadly poison. Even in very small quantities it is deleterious to health. Dr. David L. Edsall in Osler's System of Medicine says, "An atmosphere becomes dangerous when it contains 0.05 per cent. of carbon monoxide (Gruber, Haldane). Severe symptoms may be caused by 0.02 per

cent. (Haldane)". When we realize that 0.02 per cent. means as small a proportion as one part in five thousand we see how easy it is to render the atmosphere unwholesome.

The question then arises, how long can the present conditions remain or grow worse and Denver maintain her reputation as a health resort or even as a desirable place for well people to live? How long can we keep on doing as we are doing and continue to attract the tourist and invalid?

It is possible that the healthseekers are already taking cognizance of these conditions. It is said that one of our largest sanatoriums has many rooms unoccupied. The mid-Rocky Mountain region is considered by those who know to have the best climate for patients who are fighting tuberculosis, yet it would seem that some of the afflicted are abandoning Denver for other places.

The remedy for this trouble lies in the use of one of the many mechanical devices for the prevention of smoke that are on the market. They are known as automatic stokers, smoke consumers, economizers, etc. Some are very efficient and all are economizers more or less in that they produce complete combustion, stop the smoke and reduce the consumption of fuel. In power houses and large plants these machines are installed because they save money by reducing the coal bill and are a paying investment. Even in one of our large hotels an automatic stoker would probably save enough fuel to pay the interest on the first cost.

What Denver really needs is an efficient smoke ordinance and a smoke inspector who will enforce it. In London and other cities the authorities have adopted a system of taking photographs of excessively smoky chimneys. When the culprit who has been polluting the atmosphere is haled into court he is confronted with the picture of his smoking chimney, which is compared with standard pictures to determine the degree of his offense.

At the recent "Get Together Dinner" under the auspices of the Denver Chamber of Commerce a very high patriotic note was struck by Dr. Friedman and Mr. Trefez. We were told that the question of the real citi-

zen should be not, "What can I get out of Denver?" but "What can I do for Denver?" The citizens of Denver are patriotic and they should be willing even at some cost to abate the smoke nuisance without being compelled to do so.

C. P.

INACCURATE DEATH CERTIFICATES.

In the good old-fashioned days, the good old-fashioned family physician was probably disposed to bother his head very little concerning vital statistics. What does it really matter—he would argue—to the patient himself, to his family or friends, or even, after death has occurred, to the physician whether the individual dies from a boil on his little toe or a blister on his tongue. And again he might inquire with equal forcefulness, who cares—outside the unfortunate baby or the more fortunate or unfortunate people who will listen to his cooing, furnish him with food, clothing and toys, and perhaps be awakened in the middle of the night by his squalling—that a new human being has been ushered into the world.

But a benevolent collectivism or a tyrannous paternalism, however you please to regard it, has decided that the good old-fashioned physician was and is in the wrong. The international list of causes of death even goes so far as not merely to tell us that we must give scientifically correct statements concerning the fatal illness, but to indicate the exact language in which this shall be done for each case. The authority of the international list is being more and more widely recognized by city, state and national authorities, as well as by insurance companies.

Harmon (Cleveland Medical Journal, volume 15, page 17) has prepared an analysis of the inaccuracies or deficiencies on account of which death certificates were returned for correction to physicians of the city of Cleveland during the first half of the year 1915. Along general lines it may be stated that most of the certificates were returned for one of the following reasons: "because insufficient information was given regarding deaths due to external violence; because in many instances no statement was

made as to whether the disease was acute or chronic; because symptoms were given instead of disease; because the organ affected with a given disease was not stated; because the primary disease or condition was not indicated; or because indefinite or ill-defined terms were used'.

For instance, many certificates failed to state whether death from violence was due to accident, suicide, or homicide. Nineteen certificates were returned because nephritis was given as the sole cause of death, without stating whether this disease was chronic or acute. In a number of cases paralysis was given as the cause of death, although paralysis is in itself a symptom and not a disease, being caused by such conditions as cerebral hemorrhage, acute poliomyelitis, and syphilis. A similar objection holds as to the reporting of intestinal obstruction as the cause of death, it being necessary, if possible, to state the primary cause which resulted in this condition. Deaths were attributed to tuberculosis, without any mention of the organ or part of the body affected. The same mistake was frequently made with regard to tumors, and in a number of other instances the certificate had to be sent back because the nature of the tumor was not shown.

Statistics have been accused of responsibility for many unreliable conclusions. But statistics and theories are alike in that both may be extremely unsatisfactory and untruthful when resting upon insufficient foundations, while both are desirable and useful when based upon an adequate knowledge of the facts. For proper advance in the direction of personal and social hygiene it is necessary to attain the greatest possible accuracy in our statistical knowledge of the incidence and mortality of various diseases; and it is the duty of every physician to do his part towards this end.

OBJECT LESSONS IN PUBLIC HEALTH.

An interesting experiment, in the form of actual demonstrations in public health work, is being undertaken by the Texas State Board of Health. In each of three counties of the state, three demonstration districts

will be selected. As a preliminary step, a series of lectures on the prevention of sickness will be delivered in all parts of these three counties. The selection of the three demonstration districts will depend upon the interest shown in these lectures. It is intended that each district shall include approximately 1,000 people, and shall be typical in character.

When the districts have been selected, sanitary surveys will be made, showing on maps every road, home, creek, privy, and well, and every disease-producing condition. The public will be educated by house to house canvasses, by inspection of buildings and their surroundings, and by calling attention to insanitary conditions. School children will be inspected for physical defects. Lectures will be given on malaria, hook worm, typhoid, tuberculosis, and other preventable diseases, on home and municipal sanitation, and on the prevention of infant mortality. Toward the end of the campaign, by co-operation between special employes and the heads of families, houses will be screened and sanitary privies will be built.

The benefits to be derived from such a campaign will include first of all a saving in human lives, secondly increased efficiency of the individual, and finally a marked economic gain as regards the value of land and other property.

Defines Diabetic Foods.—Food Inspection Decision No. 160, recently issued by the U. S. Department of Agriculture, for the guidance of officials of the department in enforcing the food and drugs act, fixes a definite limit to the amount of starch and sugar that may be present in certain gluten products and diabetic foods, and also fixes the amount of nitrogen that must be present in certain of these products, and makes requirements as to moisture and other constituents. The decision covers ground gluten, gluten flour, self-raising gluten flour, and "diabetic" foods. The definitions and standards as stated in the Food Inspection Decision were recommended by the Joint Committee on Definitions and Standards, consisting of representatives of the U. S. Department of Agriculture, the Association of American Dairy, Food and Drug Officials and the Association of Official Agricultural Chemists. These two associations have already adopted the definitions and standards. The diabetic patient can avoid ordinary food products that contain considerable quantities of starch and sugar, as the composition of these products is generally known. In the case of prepared foods advertised for use in diabetes, however, the patient may be misled into eating quantities of starch and sugar that might be positively injurious.

Original Articles

SUBPHRENIC ABSCESS.*

J. N. HALL, M.D., DENVER.

We study many abdominal affections because in the natural order of events we are sure to encounter them. We should study the subject of subphrenic abscess with the definite idea that if we can only know enough of its etiology, we may prevent the development of a great majority of the cases, provided we be granted a proper control over the affections of which it is, in most cases, a preventable complication.

I believe there is no abdominal disease which may be at once so obscure in its symptoms and so easily overlooked, which is so malevolent and yet so amenable to successful preventive measures as the one we consider tonight.

Anatomy: The anatomical description follows Barnard's classification and many of the illustrations are taken from his classical monograph.

The cruciform arrangement of the ligaments of the liver subdivides the subphrenic space into four peritoneal fossae: (1) right anterior; (2) right posterior; (3) left anterior; (4) left posterior. An extra-peritoneal space is also found upon each side; (5) the right, placed between the layers of the coronary ligament, and, (6) the left, in the tissues about the upper pole of the left kidney.

In at least half the cases more than one of the spaces is involved. These spaces are subject to especial varieties of infection, dependent chiefly upon their anatomical relationship to neighboring organs. Thus the right anterior type (1) constituting about one-third of the total number, is especially to be found in connection with ascending appendiceal abscess, in liver abscess and in peptic ulcer.

The right posterior abscess (2), very much less frequent, is generally due to appendiceal suppuration. The left anterior abscess (3), often called an anterior peri-

gastric abscess, is the especial type identified with gastric ulcer, and is the most common form of all.

The left posterior abscess (4) involves the lesser peritoneal cavity, is rare, and is commonly due to perforation of a gastric ulcer. I have also seen this type as the result of perforating cholecystitis and of acute pancreatitis.

The right extraperitoneal abscess (5), third in frequency, is the especial type associated with suppurating hydatids and amebic abscess of the liver, these processes showing an especial tendency to burrow upward into the space covered by the diverging layers of the coronary ligament.

The left extraperitoneal abscess (6) is rare, is commonly found alone, and may originate from caries of the spine or from empyema, probably never from the appendix, according to Barnard.

Especial note should be made of the fact that in many of the cases more than one cavity is involved, so that the surgeon must be prepared to explore adjacent regions. Thus the right anterior abscess is oftentimes associated with the right posterior type. Abscess of the latter variety is practically always associated with invasion of some other cavity, generally the right anterior fossa.

The left anterior abscess (3) is commonly found alone. The abscess of the lesser peritoneal cavity (4) may extend in almost any direction. The right extraperitoneal abscess (5) is generally solitary, as is the left-sided form (6).

In general, almost any suppurative process in the abdomen or lower chest may form the starting point of a subphrenic abscess, but we should especially have such a complication in mind when dealing with appendicitis, gastric ulcer, duodenal ulcer and abscess and hydatids of the liver.

The cases originating above the diaphragm, generally from an empyema, are not very common (18 cases in 488—Archibald). In many cases we find rupture of a subphrenic abscess through the pleura, resulting in an empyema or in the perforation through a bronchus. Where pus has existed both above and below a perforated diaphragm, I have in several instances been

*Read by invitation before the Kansas City Academy of Medicine, November 12, 1915.

puzzled to know whether the abscess had originated in the chest or the abdomen. The presumption on the numerical basis favors the latter origin.

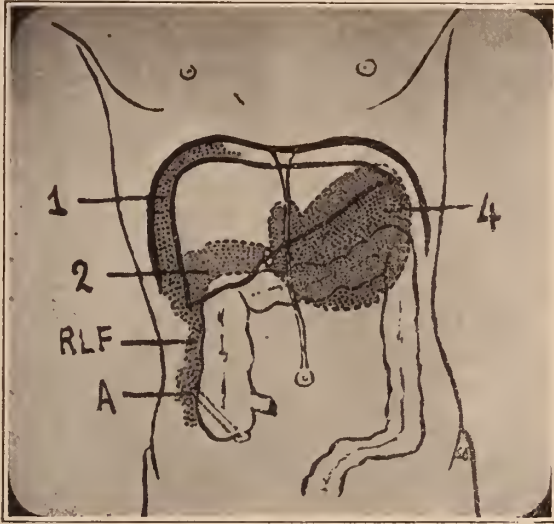


Fig. 1.—Illustrating the spread of suppuration from an external appendix, A, up to the right lumbar fossa, R. L. F., to the liver margin where it infects 1, the right anterior intra-peritoneal space and 2, the subhepatic fossa. From the latter suppuration is shown invading 4, the small sac of the peritoneum through the foramen of Winslow, a rare event. (Barnard.)

Of the bacteriology, we may merely state that the abscess originating above the diaphragm often yields the pneumococcus, but otherwise the ordinary cocci of suppuration and the colon bacillus are rather to be expected. Amebae, ray fungi, and many other organisms have been found.

Symptomatology in General: We may say with reasonable safety that subphrenic abscess is always a complication of some other disease, and the first step toward the diagnosis is a realization of the possibility of this complication of the disease we are treating. The surgeon has frequent cause for anxiety because of this affection after operation involving any of the abdominal organs, while the internist has also to carry the burden of the possibility of this complication in sepsis, pneumonia, abscess of the lung, etc.

The first intimation of trouble in the chronic cases is the supervention of an unexplained fever in a case which has been doing well, or the failure of the temperature to fall as expected in an operative case. Irregular fever, chills, sweats, frequently

cough and obscure pain and distress in the upper abdomen and chest are present. A sharp leucocytosis, often up to 20,000 or 30,000, is to be expected. In the retrocecal appendiceal type, the preliminary diagnosis of typhoid is made in perhaps half of the cases. The diagnosis is often extremely difficult.

The two extraperitoneal types of subphrenic abscess are especially found in connection with subacute and chronic infections in the abdomen. In the acutely developing intraperitoneal cases, constituting about one-half of all, as after perforation of a peptic ulcer, acute pancreatitis, rupture of the gall bladder or other viscus, violent pain, vomiting, hiccough and the signs and symptoms of an acute perforative peritonitis are noted.

In the acute variety we may have any one of the four intraperitoneal localizations of the abscess. We may, in most cases, obtain a history pointing the way to the diagnosis. This is especially true in case of gastric and duodenal ulcer and in liver abscess, the symptomatology being easily recognizable. In appendicitis, perforation so frequently occurs in the first recognizable attack that a history of previous affection is often unobtainable. Biliary colic or jaundice may be noted in the history of certain cases. Hematemesis may be present as a symptom of the acute onset as well as a part of the anamnesis in the cases originating in peptic ulcer.

By the time the patient is admitted to the hospital, we may expect a foul tongue, a dirty complexion, dyspnea, a moderate fever, often with irregular chills, a rapid pulse, leucocytosis and frequently albuminuria.

The physical examination at this time commonly shows tenderness, often a deep soreness in the diaphragmatic region, and in many cases an abdominal enlargement of some type. This is more commonly due to the collection of pus beneath the diaphragm, but in the hepatic cases the abscess in the substance of the liver from which the complicating subphrenic abscess has arisen takes part in the tumefaction. In case of intraperitoneal abscess between the liver

and the diaphragm, except it arise from peptic ulcer, the liver is not depressed, since it is adherent to the diaphragm along its lower margin. The swelling does not descend on inspiration, because of the adhesions.

In the gastric and duodenal ulcer type, however, the presence of gas anteriorly pushes the liver back and a resonant area is present. We shall speak more fully of this type under the proper heading. Peritoneal friction may be occasionally found near the lower margin of the abscess. In neglected cases I have several times seen red inflammatory edema over the right anterior and lower chest wall and the upper abdomen far to the right. The diagnosis may practically be made at a glance in such cases, but is likely to be so late as to be of little service to the patient. I recall such edema in but a single left-sided case, due to the rupture of the gall bladder in an acute cholecystitis of typhoidal origin, the left pleura having been reached via the lesser peritoneal cavity.

The thoracic signs are of extreme importance, since the abscess often comes nearer to the dorsal surface than to that of the abdomen. The pushing up of the diaphragm and hence of the lung, with dullness in place of the normal pulmonary resonance, is the first and most striking sign in many cases. Barnard records pleuritic friction in but seven out of seventy-six cases. I have found it in a larger proportion of my own cases and do not doubt that if systematically sought it should be found in perhaps half the instances of posterior subphrenic abscess and in many of the anterior varieties.

Barnard and other authors, so far as I know, have failed to mention one variety of pleuritic friction which I noted many years ago and which was present in the left-sided case of subphrenic abscess just quoted. I refer to the friction just above the region of the spleen, which gives the first intimation that an abscess involving the lesser peritoneal cavity has spread beneath the diaphragm, finally caused a diaphragmatic pleurisy, and thus led to the involvement of the parietal pleura. Such cases are likely to be followed by empyema as in this instance.

(New York Medical Record, October 17, 1908.)

There is a failure in many articles which I have read upon this subject to mention the not infrequent presence of a secondary effusion above the diaphragm in cases in which the purulent collection below it has set up so violent an inflammation as to lead to transference of the infection through its substance. It is not necessary that a gross perforation of the diaphragm should be present. In fact, the occasional finding of a serous or merely cloudy effusion in the pleura when a definite abscess exists in the subphrenic space is sufficient evidence that the pleural exudate is irritative in character and not perforative in origin. Rolleston states that in such cases the lower and purulent collection is commonly overlooked. Unless the Roentgen picture shows the diaphragm distinctly at the top of the area of disturbance it is necessary to consider the possibility mentioned.

The lung is of course compressed by the crowding upward of the diaphragm, and dullness above the line of that due to the abscess may originate from compression of the lung tissue or from an actual inflammatory exudative process. In either event decrease of the respiratory sounds or the advent of the signs of a pneumonia may be noted.

Both sides of the chest may be involved if the subphrenic abscess be bilateral. Cough, hiccup and marked dyspnea may be notable symptoms. The heart is occasionally displaced laterally, but commonly by the secondary pleural effusion. The displacement found in simple subphrenic abscess is commonly upward rather than in a lateral direction. In the cases in which the abscess breaks through the lung and a large cavity is left, as in three cases which I have seen, the resulting contraction of the lung may displace the heart far toward the affected side—the right one in the cases I have observed.

The X-ray has been of most decisive value in the diagnosis of subphrenic abscess. The most striking features in the picture are the crowding upward of the diaphragm upon

the affected side and its immobility when viewed with the fluoroscope.

The special signs of the different varieties of subphrenic abscess may be recapitulated as follows: (1) (Right anterior subphrenic abscess.) If from the appendix, the signs are likely to be in the back rather than the front, owing to the adhesions along the margin of the liver and the consequent crowding backward of the abscess with compression at the base of the right lung. The type arising from peptic ulcer is commonly gaseous and presents the "diagnostic triangle" of Barnard.

(2) (Right posterior space.) The abscess tends to run downward into the right loin.

(3) (Left anterior space.) This is the usual perigastric abscess, commonly contains gas, and presents in the left epigastrium and hypochondrium. The base of the left lung is compressed, and pleurisy may be noted.

(4) (Left posterior space.) This gives the signs of a distended lesser peritoneal cavity, as after invasion by a pancreatic lesion, and the abscess pushes forward around the stomach, displacing this organ in almost any direction.

(5) (Right extraperitoneal space.) This is commonly of slow development, without gas, pushes the liver downward, and may reach the surface anteriorly in the epigastrium or posteriorly in the loin. It is most frequently reached between the lower ribs in the right back.

(6) (Left extraperitoneal space.) This presents as a left lumbar abscess, in many cases compressing the base of the left lung behind.

Gaseous subphrenic abscess: A little over half of Wahby's fifty-nine cases of subphrenic abscess tabulated from St. George's Hospital were of the gaseous form. I believe that the earlier and more effective treatment of peptic ulcer, from which affection so many of the gaseous cases arise, has lessened the frequency of this form. I certainly have seen many more of the non-gaseous type in my own work. The addition of the gas to the abscess affects the symptoms in minor degree, but the physical signs are notably modified. Since it is in the peptic

ulcer cases chiefly that gas is present, we find it most frequently in the right anterior and left anterior varieties of abscess. It may occur, however, in any of the spaces, and may originate from organs like the liver and pancreas not normally containing air or gas as do the hollow viscera.

The signs are those of a pneumothorax, but commonly varying in position from the usual sites in this affection. Thus the tympany and movable resonance are likely to be in the hepatic or supragastric regions or in the lower parts of the thorax. Splashing is less frequently found in the subphrenic variety. The diaphragm is found above the gas in the X-ray picture and the heart is less displaced laterally and more vertically than in the thoracic type. The liver may be pushed far down into the abdomen. Bulging of the affected side is often noted.

The subphrenic pneumothorax is a more restricted affection than the thoracic type, and the upper part of the lung may functionate as usual. Notable clubbing of the fingers is said by Acland to indicate rather conclusively that the involvement is above the diaphragm. Effusion in the pleural space of the affected side is especially frequent in pyopneumothorax subphrenicus, and is often serous, and thus easily distinguished by the use of the needle. The free flow of the fluid from the needle during expiration in case it be in the pleura, and the contrary condition in subphrenic abscess, should be remembered. This (Furbringer's) sign may be absent if the diaphragm be paralyzed.

In Lang's series of 173 cases, 67 ruptured through the diaphragm. It is stated that this accident is less common in the intrathoracic than in extraperitoneal abscesses. Of Barnard's 76 cases, 23 ruptured spontaneously, 8 broke into the stomach, 5 into the pleural cavities, 4 into a bronchus, 2 into the colon, and others scattered. Of 16 of my cases, 7 ruptured through a bronchus, 2 into the right pleura, 2 into the pericardium, and one each through the colon and stomach. In one of the cases in which rupture through the bronchus was noted, a gas-containing abscess could be followed upward to the

neck upon the X-ray plate. (See Fig. 2.)

It is obvious that certain of the cases of rupture through the bronchi might have



Fig. 2.—The light area in the neck on the right side, indicated by the arrow denotes a gas abscess from colon bacillus infection. Note the high position of the right diaphragm as contrasted with that of the left, also the increased area of dark shadows extending from the diaphragm to the neck, outside of the heart and mediastinal shadow, suggesting the strong probability of causation of the abscess in the neck from a right sub-phrenic abscess.

been classed as rupture into the pleural cavity if they had come under observation at an earlier period. It is also to be recognized that earlier opportunity for diagnosis and operation might have saved the day in many of the cases. Of these 16 cases the cause was appendicitis in 10, typhoid in 1, gastric ulcer in 1, gunshot wound, 1; pneumonia, 1; abscess of prostate, 1; abscess of lung, 1; 11 of them left the hospital alive, but at least 3 had a pulmonary fistula persisting, and remained, to the best of my knowledge, invalids for life.

It is very striking to note that although I have observed meanwhile several cases of hepatopulmonary abscess in amebic dysentery, no subphrenic abscess has developed so far as I know. We have in our section generally insisted upon an early operation in peptic ulcer, and I do not doubt that in

this manner we have lessened the relative proportion of cases due to this cause.

It is of much interest to note that in peptic ulcer we frequently have subphrenic abscess, but rarely perforation of the diaphragm, while in amebic dysentery we frequently have perforation of the hepatic abscess upward into the lung, but rarely a subphrenic abscess.

Certain complications of rupture of the abscess through the lung are of interest. One man lost the right leg above the knee through septic embolism apparently originating in the infected pulmonary veins around a sloughing cavity in the right lung, just above the dome of the liver. Septic abscess of the left arm and later of the wrist also developed, presumably from the same cause. Another man had a similar lung cavity in the same location. Both had much foul expectoration. One was living more than six years after the invasion and the other more than a year. In one of the cases recovering from subphrenic abscess following appendicitis, an abscess of the liver was later opened and drained by Dr. Leonard Freeman, with eventual complete recovery. In another case following appendicitis an abscess of the liver was noted, with fatal results.

The patient who suffered the septic embolic processes had a most marked bowing concave to the right, evidently due to the cicatricial contraction about the suppurative area.

Pylephlebitis, a not unusual complication of appendicitis, frequently gives rise to abscess in the liver which may involve the right extraperitoneal and right anterior intraperitoneal fossae. Pulmonary embolism is said to be not infrequent in desperate cases, the clot coming from a thrombosed branch of the vena cava inferior. I have not recognized this complication.

The most difficult cases from the surgical standpoint are those rather unusual ones which rupture through the arch of the diaphragm and burrow upward in the mediastinal space, as in two of my cases mentioned above. In neither could successful surgical measures be carried out, and I doubt if they ever can be. One had been unsuccessfully

operated on for a supposed empyema by two different surgeons before I saw him, although in my opinion, upon entirely insuffi-



Fig. 3.—The arrows on each side indicate the height of the diaphragm. Note the great elevation of the right diaphragm from a sub-phrenic abscess. The dark area in the outer half of the right lung is occasioned by pus in the pleural cavity. Both these conditions verified by operation.

ficient physical signs. The expectorated pus, in large quantities, had so strongly suggested an empyema that both surgeons operated because of the suggestion, regardless of the absence of the usual signs of empyema. Dr. H. R. McGraw found in this case a lung cavity communicating with a bronchus near the right mediastinum. It was successfully drained, but the patient died some weeks later after an attempt to collapse the chest wall over the cavity.

These are the cases in which, as in another patient of mine, even twenty attempts to locate the abscess with the needle may be unsuccessful, the reason being that there exists a mere track from the abdomen to the dome of the diaphragm, and it is too far in from the periphery to be reached by the aspirating needle. Operative measures are at best a desperate resort in such cases.

Differential diagnosis: The history of liver trouble, as in amebic dysentery, the sharp upward bulging of the diaphragm, and the character of the aspirated pus ordinarily distinguish the liver abscess. The serous character of the pleural exudate in simple pleurisy, the non-odorous pus in empyema, and the fetid pus, often containing food particles, and accompanied by foul gas, in subphrenic abscess, are sufficiently characteristic of the respective affections. The offensive odor of

the pus expectorated from a subphrenic abscess which has ruptured through a bronchus should suggest to the attendant the true diagnosis, since in ordinary empyema such odor is unusual. The possible changes in position of the diaphragm in the three diseases serve to vitiate any conclusions drawn from the exact site of the aspiration. The occurrence of secondary irritative effusion above the diaphragm in subphrenic abscess may cause confusion unless the possibility be recognized. During operation, in different cases, I have seen Drs. Craig, Freeman and Perkins each in doubt as to whether pus was above or below the diaphragm until the latter was actually palpated after the incision. Such doubt is commonly avoidable by use of the X-ray, but exact diagnosis is often possible only by exploration. When I state that I have recently seen a case of empyema in which four grossly different varieties of fluid were withdrawn from different punc-



Fig. 4.—Sinus tracts following a left peri-nephric sub-phrenic abscess. The black irregular areas and lines indicate the sinus cavities after a bismuth injection. This injection courses extra-peritoneally both in the back and front of the abdominal wall as shown by the stereoscope. The arrow indicates the height of the left diaphragm. At operation the location of the sinuses as above described was verified.

tures, and in which the pericardium, as felt by Dr. Craig through the operative wound, contained yet another effusion, one can easily understand the possibilities when fluid also exists beneath the diaphragm. The occasional perforation of the diaphragm with open connection between the two cavities involved must be thought of, and the possibility of opposite-sided pleural involvement as well.

The gaseous type of subphrenic abscess has generally a history of abdominal rather than thoracic disease. Cough is less prominent as a symptom of the subphrenic affection than in case of thoracic pneumothorax. The heart is less displaced laterally in the former disease.

I have been so afraid of overlooking the beginning of subphrenic abscess in bad cases of appendicitis that I have on several occasions, as in two recent cases seen respectively with Dr. Tennant and Dr. Shere, been convinced of the falsity of such a provisional diagnosis only by the advent of pus and bacteria in the urine. In neither case were we able to eliminate the more serious condition until we obtained the urine. In case of doubt it is certainly best to administer urinary antiseptics freely until the possibility of the complication is eliminated.

In one case, Dr. Stover was able to differentiate a diaphragmatic hernia by the finding of the bismuth shadow above the line of the diaphragm.

It should be noted that involvement of one side by subphrenic abscess does not at all preclude the invasion of the *pleura* of the opposite side. The abscess under the dome of the diaphragm may easily reach across and cause such involvement, as in one of the cases noted. The stomach should be evacuated with the tube before attempting to demonstrate movable dullness in a gaseous subphrenic abscess, as confusion is otherwise almost inevitable.

The aspirating needle should ordinarily be used only after preparation for operation and an anaesthetic, since much danger exists of bringing about infection of the uninvolved pleura or other region. The needle may be freely used in the chest and in the region of the liver, but not in the anterior

abdominal region unless under very exceptional circumstances.

Prognosis: Cases of subphrenic abscess are very commonly fatal because they are not recognized in time for effective operation. They die of sepsis or perforation with prolonged exhausting suppuration, usually after a course of from six to twelve weeks. I have stated elsewhere my belief that under the best of conditions 80 per cent. might be saved by operation. Barnard believes that 16 per cent. mortality would be the best possible under any conditions.

When we reflect that Christian and Lehr found subphrenic abscess in over 8 per cent. of fatal cases of appendicitis, and when we compare the relative dangers to the patient of an early appendectomy and of the attempt to cure subphrenic abscess surgically, we are, in my opinion, criminally negligent if we fail to set forth the advantages of early operation to every patient in the early and safe period of his attack of appendicitis. In an average thousand unoperated cases of this disease, we should probably lose ten times as many from this single complication as any fair surgeon, if he operated the entire number on the first day of the attack, would lose from all causes combined. We may speak no less positively as to the urgent need of early operation in other surgical affections of the abdomen. It is an important part of the treatment of these difficulties to steer the patient away from the complications which may render his curable disease a fatal one.

I am indebted to Drs. Childs and Crosby for the excellent roentgenograms shown herewith.

452 Metropolitan Building.

In a recent work entitled "The Biology and Treatment of Venereal Diseases," A. E. R. McDonagh takes the view that the true cause of the symptoms of syphilis is the spore of *spirochaeta pallida*, and that the spirochete is only the male gamete of the life cycle of an organism which he has named the *leucocytozoon syphilidis*, and of which he gives a minute description illustrated with microphotographs and colored plates.

J. Michell Clarke (British Medical Journal, November 6th, 1915) says that some of the purely nervous diseases which are characteristic of the sixth and seventh decades of life, especially paralysis agitans, may owe their origin to that process of premature senescence or defective vital endurance of certain neuron systems known as abiotrophy.

CONSERVATISM IN THE OPERATIVE TREATMENT OF FRACTURES.*

MILLER E. PRESTON, M.D., DENVER.

History repeats itself in everything, and one of the most interesting subjects in the evolution of medicine is the manner in which the pendulum swings back and forth as regards the employment of new therapeutic measures.

There was a time when almost every disease was bled, and often bled to excess. In the early part of the last century it would seem that the profession was occupied almost entirely in administering severe emetics, or in bleeding the patient. In time the reaction came; the pendulum swung past center and to the opposite extreme, so that the physician who even suggested bleeding was considered barbarous and was set down as a back number, even though the exigencies of the case may have indicated phlebotomy.

It was not many years ago that oöphorectomy was performed on the slightest provocation and for reasons which would in no wise be considered proper indications for such a surgical procedure at the present time. This irrational enthusiasm was soon followed by a revulsion of feeling which resulted in this operation falling into an unjust and exaggerated disrepute. At the present time the indications for removal of the ovaries are well established and abnormal enthusiasm as well as unreasonable pessimism have been superseded by a sane, cool judgment based on reason and experience.

Just a few years ago the world (both lay and medical) was wildly enthusiastic in its praise of salvarsan, and the established methods of treating syphilis appeared for the time being to be discarded. The reaction has already come and even the opposite extreme has been reached, as indicated in the last issue of Murphy's Clinics, in which the author condemns this drug and advises the use of sodium cacodylate in its stead. And here it is well to the point to remember that sodium cacodylate is a much older drug

than salvarsan. I am not considering the qualities of salvarsan, but rather the child-like fickleness of those who have used it. Salvarsan is the same material today as it was the day of its introduction to us.

Instances like these are too frequent in the history of medicine to allow even of enumeration. We know only too well the faults of the past, but it seems a human trait that we cannot, or at least do not, apply this lesson to the present. We blame the laity for being imposed upon by the medical faker and the advertising quack, who set up new and false therapeutic gods for them to worship while the good hard cash is being extracted from their pockets, and yet the history of medicine shows that we are very similar in the manner in which we rush upon the new idea. We work it to death and slaughter it with unreasonable praise, and then because it cannot accomplish the impossible and live up to the false standards we ourselves have set for it, we cast it aside in disgust, failing to recognize the good it really does contain. It would seem that no valuable measure can be introduced to the medical profession without its being immediately overdone and later neglected. In time it is again taken up with saner judgment and accorded its proper place among therapeutic agents.

The operative treatment of fractures is a fair example of this swinging of the pendulum. There was a time when a man was considered a fool who would use a knife in the treatment of a fracture. To change a simple fracture to a compound fracture was criminal and but proved the incapacity of the surgeon who did it. Later on it was demonstrated that fractures might be operated upon with safety if certain conditions were observed. The medical world received the idea with enthusiasm and some surgeons have gone so far as to advise the operation of all fractures. What with poor technique and the desire to operate, often regardless of indications, the results have in many instances been none too good.

Too often the surgeon flatters himself that he is "up to the minute" because he is ready to try out almost any and every new method which may promise better results.

*Read before the Medical Society of the City and County of Denver, December 7, 1915.

Unfortunately the writers of these articles are sometimes biased and overenthusiastic, while on the other hand, the reader is prone to essay new technique without thoroughly understanding the underlying principles involved.

There is no branch of surgery in which nature is more exacting than in bone work. To be successful in this field, the cases must be carefully selected, the most rigid asepsis should be observed, the surgeon must possess a good working knowledge of anatomy and fully appreciate the laws of stress, strain and leverage. It is not for the purpose of indicating the qualifications necessary for this work that these matters are mentioned, but rather to call attention to the manner in which the different methods have been abused in the past.

The internal fixation of a fracture is decidedly an engineering problem as well as

a surgical procedure, and it is probable that a larger percentage of failures have resulted from violation of mechanical laws than have been due to faulty surgical asepsis. In fact, it would seem that good surgical technique is much more common among surgeons than is adequate mechanical sense.

The point which I particularly desire to make tonight is that there is good in all methods, and that it remains for us to recognize the strong points of each and to see that the proper surgical and mechanical principles are observed, whichever technique we select as being most applicable in a given case. Each and every fracture which we encounter presents different mechanical features, and it is often difficult to determine just which form of fixation will answer the purpose best for the case in hand. We should fully appreciate the nature of the materials with which we have to

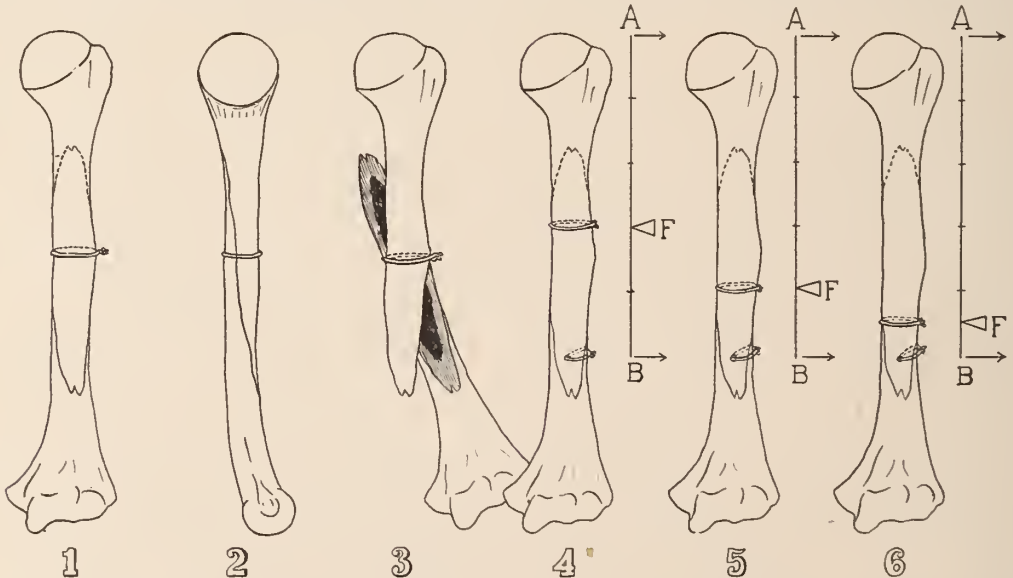


Fig. 1. Let us take for example an oblique fracture of the shaft of the humerus which has been held in place by an encircling wire. This fixation prevents angular displacement in the sagittal plane, but is almost useless in holding the fragments against angular deformity in a coronal plane.

Fig. 2. Lateral view of same case.

Fig. 3. Angular displacement in the coronal plane. The mechanical disadvantage of the wire is apparent. One might use two sticks to break a loop of wire in just this way. When this type of fracture is immobilized in this manner the prevention of angulation in a coronal plane rests entirely with the external fixation employed.

Fig. 4. The same fracture fixed by two loops of wire, thus preventing angulation in all planes. Let us consider the upper fragment as a lever

of the first order. Lever = $A B$ with fulcrum at F . The distance $A F$ is 3 while $F B = 2$. A force therefore of ten pounds exerted at A will result in 15 pounds at B . The leverage is good and therefore the stress to which the wires, as well as the bone in which they are placed, are subjected, is not great.

Fig. 5. The upper loop of wire is lower, i. e., nearer the lower loop, and hence the two wires are both at a greater mechanical disadvantage. $A F = 4$ and $F B = 1$. Therefore a force of ten pounds exerted at A will result in 40 pounds at B . Hence the stress to which the wires, as well as the bone in which they are placed, are subjected, is much greater.

Fig. 6. In this figure the loop is still lower. The distance $A F = 4\frac{1}{2}$ while $F B = \frac{1}{2}$. A force of ten pounds exerted at A will equal 90 pounds at B .

deal and this means many things. The internal structure of the bone in question should be known, as well as its surface form. The relative distribution of compact and cancellous tissue should be fully appreciated, since it is only in the former that screw, nail or peg can obtain a solid hold. The muscular and ligamentous attachments should be known, together with the directions of pull exerted by the different muscles. The strength of the materials used for internal fixation should also be understood. If wire is employed its tensile and torsion strength should be known, and sufficiently heavy material used to accomplish its purpose. Unfortunately the stress to which the bone and internal fixation materials are subjected cannot, in practice, be reduced to figures as is done in engineering, but nevertheless, the problem exists, and if not properly provided for will result in failure.

Having gained a practical appreciation of the strength of bone, one might think that the matter was settled, but it is not. There is an extremely important distinction to be

made between the strength of a given portion of the skeleton and the degree of stress which that same part will sustain permanently without change. This difference reminds us that we are dealing with a living tissue. Any great stress applied permanently to a given part of a living bone will produce absorption, which means loosening of the fixation material and at least partial failure as a result of the surgical venture. Aside from asepsis there is probably no more important feature in the open treatment of fractures than this matter of stress, and still we can scarcely find mention of it in our text books. Is it surprising, then, that we sometimes see bad results with all methods—bad results which are considered unaccountable simply because the operation was aseptically done and the wound never contained pus? Thus, the material used is often blamed when the real cause of the trouble lies solely in the way in which it is placed. Stress and leverage are so intimately associated and interdependent in the open treatment of fractures that it is impossible

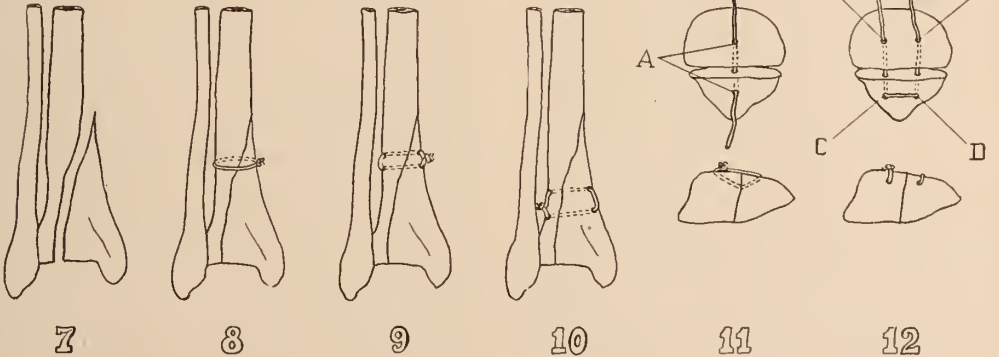


Fig. 7. This figure represents a not uncommon fracture; a splitting off of the internal malleolus of the tibia with widening of the mortise in which the astragalus fits; a most serious fracture if reduction is not accurate.

Fig. 8. Reduction and fixation by means of a loop of wire passed about the fragments. Consider the lower fragment as a lever. The loop is too high and the tapering formation of the bone may result in its slipping upward, thus loosening its hold and further decreasing its leverage.

Fig. 9. The wire has been passed through two transverse holes drilled through the fragments, thus preventing its slipping upward. The wire, however, is too high and the holes drilled too close together. The pull to which the wire is subjected is distributed over the surface of the bone between the drill holes. Therefore the closer the holes the greater the stress per unit of bone.

Fig. 10. In this figure the wire is placed at a

lower level, thus securing better leverage, while the holes are drilled further apart, thus distributing the stress over a greater area of the surface compact tissue.

Fig. 11. Represents a transverse fracture of the patella seen in front and from the side. The displacement is corrected by a single loop of wire. It should be noted that the entire pull of the quadriceps comes on the edges of the drill holes as indicated by "A," and the stress thus resulting may be sufficient to produce absorption of bone and separation of the fragments.

Fig. 12. Represents the same fracture fixed by means of a mattress suture instead of a single loop. When the fragments are approximated and the ends of the wire twisted together the pull of the quadriceps is distributed over the surface compact tissue between the holes A and B and between the holes C and D. Thus the stress on any given portion of bony tissue is less than that exerted on the margins of the holes in Fig. 11.

to consider one without the other. The degree of stress to which the bone and fixation material are subjected often depends on the leverage obtained for the fixation material when placed at operation.

Wire is one of the oldest materials used and hence has been subjected to the most abuse. This abuse of wire as regards stress, strain and leverage can probably best be covered with a few diagrams.

Good results have been obtained with wire in the past and may be repeated in the future. In other words, wire is as good today as it was the day it was first used in the open treatment of fractures, and indeed it is much better today if we will but learn the lessons which experience has taught us, and not attempt the impossible with it. This reminds me again of the much-abused phrase "foreign material". If the operation is successful and the wire remains in place for years without the slightest annoyance, the surgeon congratulates himself on his skill and the incident is closed. If for any reason the wire has to be removed, and infection has not been present, the surgeon prates about nature throwing off the foreign material, but never stops to analyze just what foreign material means and whether or not the wire was properly placed with regard to stress, strain and leverage. A tooth filled with gold, alloy, cement or any other material contains foreign matter, but whether or not the filling remains in place and properly accomplishes its purpose does not depend on the material being foreign or otherwise. It depends on other factors, and the dentist has made it his business to find out just what these factors are, and he sees to it that the filling is placed under the proper conditions.

I have no desire to enter in detail into the technique of the internal fixation of fractures nor to awaken a discussion of the relative merits of absorbable and nonabsorbable materials in this work. On the contrary, I wish to call attention to the fact that much of the unjust criticism of different methods has resulted from the abuse of these methods and has not been really due to inherent defects. For example, I do not claim that wire is always the best material

to use, but I do know that it may be carried for years or for life without giving trouble if properly placed. If this is possible in some cases it should be possible in all, provided the conditions are the same. The question then arises as to just what these conditions are. I will not even state at this time just what all these conditions may be, but will confine myself to pointing out where some of the most essential principles have been violated and disregarded.

One of the most important factors in conservatism consists in an accurate determination of the indications for a given operation and not in the alternate praise and condemnation of a method. It might seem from the examination of some of our X-ray plates that opinions on operative methods have too often been based on surgical luck rather than on sound surgical judgment. It might also be noted that those most violent in their condemnation are often those whose work shows the most flagrant violation of mechanical principles, if not of surgical asepsis.

The Lane plate has been subjected to the same abuses that almost every good method has undergone when first introduced to the medical profession. It was taken up and worked to death, often by those who failed to appreciate that it was governed by the same mechanical and surgical laws as other appliances. The matter of stress is one which has been signally disregarded in the use of the Lane plate. The usual notion seems to be that if a plate is placed in position without splitting the bone, everything is as it should be and that a good result is to be expected, provided, of course, the operation is aseptically done. Just think for a moment of the tremendous lateral pressure which a screw must exert to split the shaft of one of the long bones, and let us suppose that one or more of the screws in a given case exert a stress just short of splitting, what must the result be? The region of the bone submitted to this abnormal and enormous stress must undergo change until a condition at least approximating a state of ease is reached. This will be accomplished by absorption of bone and the rarefying osteitis will be greatest and earliest in the re-

gion directly surrounding the screw. When it comes to tying skin sutures the surgeon readily appreciates the effect of too much tension, since the cause and effect are directly under the eye, and when the stitch is too tight and causes trouble he sees the reason and does not talk about the stitch being a foreign material. On the other hand, motion between the plate and bone will lead to failure as readily as undue stress. When a screw loosens it is usually because of too tight seating in compact bone, or because of its having been placed in cancellous tissue. A not uncommon fault is the use of too short a plate, and it is here that the surgeon attempts to make up for the deficient leverage of the short plate by driving the screws home with undue force. Lane himself has laid great stress on the use of sufficiently long plates, and in looking for the underlying reason we find that it is to secure proper leverage, which will allow the screws to obtain their holds without undue stress on the bony tissue in which they are seated. The Lane plate being a solid bar, is adapted to all the different types of stress, namely, compression, tension, torsion and shearing, but the strength of the plate should not cause us to lose sight of the fact that the underlying bone is after all sustaining all the stress to which the plate is subjected, and that the means of transmitting this stress are the screws which hold the plate, together with the bone in which they are seated. The answer to the question, then, is that the hole in which the screw is placed must be of exactly the right size and accurately centered. If too small it requires considerable force to seat the screw, and if too large, the screw is allowed to tear out the threads in the bone with the first slight strain to which the member is subjected. The Sherman self-tapping screw is the best screw to use in compact bone. This screw is of the same diameter throughout and the end is in the form of a machinist's tap, thus cutting the thread in the bone as the screw is being seated, and not crushing it as is done with the wood screw. The bone surrounding the screw is thus left in a state of ease, or at least comparatively so, and secondary changes are avoided. Aside from

the manner in which the thread is cut the bone may be placed in a state of great stress by driving the screw home too tightly. If the hole in the bone and the hole in the plate are not concentric, great stress will be produced when the screw is driven home.

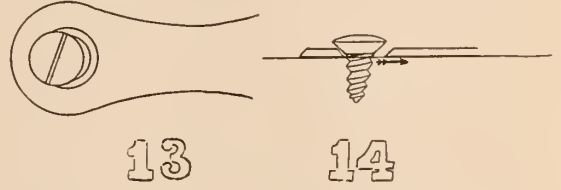


Fig. 13. Represents the end of a Lane plate with the screw being driven home "off center."

Fig. 14. Same as Fig. 13, lateral view. When the side of the screw head comes in contact with only one side of the countersunk hole in the plate great lateral stress is exerted on the screw and the bone into which it is driven. Great stress is exerted on the bone in the direction indicated by the arrow. A screw seated in this way is almost sure to loosen as a result of this undue stress.

It will, of course, be impossible to enter thoroughly into all the mechanical phases of the Lane plate this evening. The points thus far mentioned have been for the purpose of indicating the manner in which the Lane plate has been abused from a mechanical standpoint. It is significant how good the results obtained by Lane have been and how poor the reports have been from some other surgeons, and this in spite of the fact that Lane has undoubtedly been too enthusiastic in the use of his plate. Let us, then, recognize the real good which the appliance possesses, and not kill it with overpraise on one hand nor blind condemnation on the other.

At the present time the bone graft is undergoing the same abuses as did the Lane plate a few years ago. It will be overdone and abused, and it will probably not be long before we see some of the symptoms of reaction coming from different parts of the country. The bone graft is subject to the same surgical and mechanical laws as apply to the different methods of internal fixation, and if the surgeon cannot or will not master these laws under which he has to work, it would be better for him to leave this branch of surgery alone. A portion of bone may be exposed to a certain amount of infection and recover, and in like manner it may be subjected to a certain degree of abnormal stress

and live, but when the circulation of a section of bone is temporarily cut off as obtains in a bone graft, it is only reasonable to infer that it will survive less infection and withstand less stress than it would if its circulation were unimpaired. Hence rigid asepsis and the most careful observance of mechanical laws are even more essential in bone grafting than in other bone cases in which the circulation of the osseous tissue operated upon is only partially disturbed. It would seem at the present time that the inlay or cortical graft has gained in popularity over the medullary graft. It is significant to note that the latter is more liable to be left in a state of great stress after having been driven into the medullary cavity than is the case with the inlay graft. The matter of stress, however, is only one of the points of difference in the two methods, and cannot be held entirely responsible for the popularity of the inlay graft.

In conclusion, I will return to the matter of conservatism, the "golden mean" of the ancient Greeks, and "Keep in the middle of the road" policy of the Yankee, all of which mean the same thing. Pope in his *Essay on Criticism* very aptly says:

"Be not the first by whom the new is tried
Nor yet the last to lay the old aside".

Let us fully appreciate the good qualities of the different methods as well as their drawbacks, and let us see to it first, last and all the time, that we know the nature of the materials with which we have to deal, and that the work is done with due regard for the established rules of modern aseptic surgery and for the laws of stress, strain and leverage.

330 Metropolitan Building.

SCOPOLAMIN AMNESIA, OR TWILIGHT SLEEP.*

CHAS. A. FERRIS, M.D., DENVER.

The fact that for centuries woman has had to suffer the pangs of childbirth unalleviated is no reason why, in the light of the constant developments of modern scientific research, efforts to find some means for

lessening her suffering during this trying period should not be made. Certainly none but a pessimist could possibly deery any legitimate attempt made with so worthy a purpose in view.

Unfortunately on account of the wide publicity given the "twilight sleep" by the lay press, the honest practitioner throughout this country who is anxious to be posted upon this subject hardly knows whether in his efforts he may be considered as a "benefactor of humanity" or as a "base impostor."

We are too eager to take up with the latest fad without sufficient investigation, and equally ready to condemn without trial things concerning which we know but little. We ought therefore to inform ourselves concerning the possibilities of scopolamin in obstetrics (and also in surgery), in order to clear up the atmosphere of mysticism apparently surrounding it as much in the professional mind as with the laity.

The use of scopolamin-morphin amnesia-analgesia in child-birth seems to have been brought to a condition approaching perfect success as used in the clinic at Freiburg by Krönig and Gauss; but the experiments in this country have practically all been more or less modifications of the Freiburg method, either as to the conditions surrounding the giving of the test or as to the drugs used, or as to dosage, time of administration, etc. Consequently widely differing reports as to success are published.

In the course of these experiments, instances have occurred where the experimenter has met with either flattering success, with the result that he became oversanguine, or doleful failure, with corresponding discouragement; which proves that the same treatment used in different individuals may bring widely differing results, here as in all other fields of medicine. But this difference is particularly true as regards the use of scopolamin, even when a pure article is used.

I shall not attempt at this time a recital of case histories or statistics of any kind, as I believe the subject to be simply in its infancy and therefore that just conclusions cannot as yet be arrived at.

I believe that the original method of ad-

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

ministration is sufficiently well known to require merely a brief outline of it here, which I will give, and then follow with some of the findings which different experimenters, including myself, have noted.

In the original method the treatment is begun after the patient has been proven to be in labor with regular pains. It is administered in a dark, quiet room, with cotton in the patient's ears to exclude noises, and surrounded by every detail of quietude possible, including the absence of relatives from the room.

The initial dose was 1-6 gr. of morphin with 1-150 gr. of scopolamin given hypodermically. The morphin has now been superseded by narkophen (an opium derivative) 1-2 gr. The subsequent doses are given at intervals, gauged according to the degree of amnesia. Morphin is usually omitted altogether after the first or second dose and the scopolamin may be given in decreasing dosage. The usual interval varies from three-quarters to one and one-half hours. The usual effects obtained are about as follows: the mouth becomes dry, the face flushed, the pupils dilated, the patient becomes drowsy and sooner or later falls asleep and even snores between the pains. The pulse may or may not be accelerated, the respiration may be slowed or unaffected. She arouses and seems conscious of her suffering during the pains only to doze off again when they subside.

The object desired is just a sufficient amount of the drug to keep the patient in a condition of semi-slumber, and in cases that culminate favorably the patient awakes from her slumber in from a few minutes to a few hours after the delivery is accomplished, remembering nothing of what has transpired since the administration of the initial or second dose or even for some time previously.

In one of my successful cases the patient was absolutely amnesic for a period from several hours previous to the administration of the initial dose to six hours after the delivery. In this case there was no morphin used, only scopolamin and strychnin being given.

It was soon discovered that it is neces-

sary to have a drug of standardized purity as a first essential, also anesthetic skill of a certain nature is required to find the dosage necessary to keep the patient under with the least amount of the drug. The test should not be made in accordance with the apparent amount of suffering, but by the condition of amnesia present, and this may be very deceiving, as some patients seem to be rational and conscious most of the time, though really under the effects of the drug in a state of semi-consciousness, and it will be found that they remember very little of what has occurred and have only a hazy recollection of suffering.

Some experimenters have a schedule of administration based upon the time it takes for the effects to apparently wear off; others use the memory test, which consists in testing the patient's ability to remember objects or events. Whenever the patient is deeply narcotised and the uterine contractions are becoming impaired, the next dose indicated on the schedule should be lessened, or omitted altogether. The average number of doses required is three to thirteen, according to the length of the labor or the susceptibility of the patient. The amount may be greatly decreased and still produce a successful issue. Certain variations from the original method have been tried with varying success, e. g., the morphin may be entirely dispensed with. The author has had a number of entirely successful cases with no opiate at all. Morphin, atropin and scopolamin may be used. Morphin, atropin, scopolamin and strychnin is another combination. The method I am using at present is about as follows: Initial dose, codein phosphate grains 1-2, scopolamin grain 1-200 given when the pains of the first stage are not well borne and progress is slow as a result. Second dose, same amount as first after an interval of an hour. Third dose, codein grain 1-4, scopolamin grain 1-400 in about $\frac{3}{4}$ to $1\frac{1}{2}$ hours. Fourth dose, scopolamin grain 1-400 in $\frac{3}{4}$ to $1\frac{1}{2}$ hours. Fifth dose, scopolamin 1-800 in $\frac{3}{4}$ to $1\frac{1}{2}$ hours. Sixth dose, scopolamin 1-800 in $\frac{3}{4}$ to $1\frac{1}{2}$ hours, etc. This makes a total of about a grain of codein and from 1-75 to 1-30 of scopolamin, which you will note is well

within the physiological dosage for these drugs, even if given at one dose. Darkening the room helps considerably, but I have never used cotton in the ears. The use of chloroform towards the end of the second stage seems advised by most experimenters, but that chloroform may be necessary is no reason for assuming that the case has not been a successful one from the standpoint of amnesia. When the chloroform is started it seems to increase the delirium considerably, so that it becomes necessary to use more chloroform than ordinarily at first; later it usually requires less.

In the first stage of labor the contractions may or may not be impaired. Towards the end of the first stage the only evidence of increased severity of the contractions is that the patient becomes more excited and slightly unmanageable. It is necessary to make more frequent examinations than in cases where we do not use the drug, in order to determine the progress, due to the fact that the scopolamin seems to have a decided effect in softening the cervix and perineum, and consequently after the head has been moulded by the bony pelvis the balance of the delivery is comparatively less painful. During the second stage the patient makes very little apparent effort at bearing down, so that some think that interference becomes necessary, but if given time, most cases will deliver themselves eventually with seemingly much less effort than ordinary.

As a brief summary of the favorable as well as the untoward effects thus far noticed, the following have been culled from different observers:

As to the physiological effect on the patients: Marked thirst and dryness of the throat may be somewhat assuaged by water or lemonade and by glycerine and lemon on the lips. Some have noted headaches; none of my cases have complained of this symptom. Blurred vision; in none of my cases has this been apparent. Delirium of a certain nature is met with in most cases that are successful. The delirium consists mainly in incoherent, foolish and disjointed phrases and in incoordination of muscular efforts, and is never of a serious or frightening or maniacal nature as supposed by

many. One thing I have noticed is the tendency for foreigners to revert in their utterances to their native tongue. As to the management of the labor may be noted: the masking of early symptoms, e. g., rupture of the uterus, eclampsia, etc; uterine contractions impaired, and thus labor prolonged. A more frequent use of forceps is claimed by some, by others less frequent. Some have noted inability to recognize the onset of the second stage and to determine from the patient's conduct what the progress is. Other criticisms are: difficult control of patients; more frequent necessity for operations (very questionable to my mind); uncertainty of the outcome, as you cannot determine in any case whether they are under the influence sufficiently or not; a more intimate knowledge of obstetrics being required in order to successfully administer semi-narcosis, as more judgment is required in the management of the labor. It is claimed pituitrin does not act so successfully in these as in other cases.

Post-partum effects: Delay in lactation has been noticed in some cases, but on the other hand, it is claimed that the converse is ordinarily true, on account of the conservation of the patient's energy. Post-partum hemorrhages are reported: whether or not these may be due to the treatment is a question, as we meet with a certain percentage of post-partum hemorrhages ordinarily.

Fetal asphyxia has been claimed as a serious contra-indication, but is not liable to occur unless morphin is given too near the end of labor.

Under the head of advantages may be noted in the first place the marked decrease in the physical and mental suffering, which of course is the great desideratum.

Following labor most patients are comparatively fresher and stronger, otherwise I believe convalescence is uninfluenced. The talk of patients being up the second and third day is foolishness, as the physiological process of uterine involution must necessarily take a much longer period. I believe one of the effects to be a softening of the cervix and soft parts of the birth canal, and hence the percentage of tears is greatly lessened.

As to whether or not the general practitioner should use this treatment, I do not think it should be attempted except in hospitals, but can see no reason why it should not be undertaken by intelligent practitioners who will study its effects carefully. Baer¹, after a very severe arraignment, says: "We feel compelled to condemn it, leaving open the question of the merits of a single dose of morphin and scopolamin in those cases in which we have hitherto given morphin and atropin." Thus you see that while condemning it he admits its partial benefit in certain cases. Libby² says: "We are strongly encouraged by the testimony of mothers to continue the use of scopolamin and narcophen semi-narcosis in obstetric cases". He also says: "The very satisfactory result in the majority of cases provides the stimulus to secure further improvements in the method which will broaden its field of application, and remove its objectionable effect upon the newborn infant". Van Hoosen³ has written a book in which she strongly encourages its use. Various other observers have given opinions both for and against.

Polak⁴ reports four hundred cases with no maternal or fetal deaths attributed to the drugs.

Conclusions: Scopolamin amnesia, partial or complete, is indicated in any case where the patient is suffering severely and the period will be long until time for active procedures to begin for termination of the labor, whether those procedures be eventually for normal delivery or operative.

640 Metropolitan Building.

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DISCUSSION.

C. G. Parsons, Denver: Twilight sleep, as Dr. Ferris has said, is in its infancy. The Gauss method, as you know, was instituted in Freiburg in 1904, and it is only within the last year or two that the method has been standardized, so to speak. When one analyzes the phenomenon produced by the Freiburg method, it really resolves itself into hypodermic anesthesia and its results. Inhalation anesthesia of a certain depth, if wanted, is secured by administering the drug in given amounts, and by watching various reflexes, breathing, etc. With scopolamin-morphin amnesia,

analgesia, or anesthesia, a certain zone is secured and maintained evenly by giving the drug at intervals hypodermically; only instead of giving one of our anesthetic drugs, as ether, for instance, the drugs happen to be scopolamin and morphin. There are two general zones produced by scopolamin-morphin, namely a light zone and a deep zone. A mean between the two is the aim in Dämmerschlaf, and to attain and maintain this zone requires accurate knowledge and keen perception of various reflexes, signs, and perhaps depths for amnesia. It is not necessary to be continually testing the patient as to her state of amnesia. Many other signs are of value to determine the zone of narcosis. Just as one gives an inhalation anesthetic, making use of signs and reflexes, so also does one give scopolamin-morphin, only hypodermically. I think that if the profession once gets the fact that the Freiburg method is simply hypodermic anesthesia, and that a certain zone or depth of semi-narcosis is uniformly maintained during the labor, the understanding of the subject will be clearer. The method cannot be used haphazard. To conduct a real Gauss Dämmerschlaf, one must be constantly with the patient, and conduct the case just as if giving an anesthetic. This takes time, and the busy practitioner really doesn't have the time. The method must be used in selected cases, and the physician must have the cooperation of an intelligent and sensible patient. To obtain the best results the patient should have an idea of the nature of the twilight sleep before labor. It is essential that pure drugs be used; the surroundings must be carefully attended to. A certain anesthetic zone must be decided upon, and then uniformly maintained. Every patient has a definite dosage suitable for her case. When once this dosage is determined, which takes from one hour and a half to two hours, then all subsequent doses are the same, with a definite interval between. Morphin, if used, must be given guardedly, often 1-24 gr. being sufficient at a dose, and then only in the early stages of the twilight sleep.

A. M. Moore, Denver: I am enthusiastic in the use of twilight sleep. The first article calling my attention to it was in a sample copy of the American Journal of Clinical Medicine for May, 1907. That article gave so perfectly the technique for every detail of the use of twilight sleep that I would recommend you to get a copy and read it. Anyone who will get the article and be sure he is using scopolamin that is minus 20 or higher can make use of twilight sleep successfully. I have read a great deal of what has been written for and against twilight sleep, and when practitioners tell you that it is not safe outside of a hospital, I wish to say the fact is absolutely not so. I have practiced in a country district for twelve years, and when I read that article it appealed to me so strongly that I at once wrote to Merck and Company to get the scopolamin. Through them I succeeded in getting tablets of the proper purity and strength and began to use scopolamin-morphin anesthesia in obstetrics. I have now made use of it in more than one hundred cases, and in none of these had I so much as a trained nurse for an assistant. In every case in which in my judgment it was applicable it was a success. Of course it would not do to follow a routine, injecting a definite amount of scopolamin or morphine in every case.

To show you that there is little or nothing in those statements that tell you it must be used only in a well-equipped institution, I will mention

a patient who had her first experience in North Carolina. She later came to Barr, Colo., where I attended her in her second confinement, using the twilight sleep successfully. A third experience for this woman was at Hay, Wash., and when she was approaching the time for the third delivery she wrote that if she could raise the money necessary for her to come to Brighton, Colo., she would come to have me use the twilight sleep, but as that was impossible she asked if I could not send the necessary instructions and drugs, as it was not known of there.

I sent a copy of the American Journal of Clinical Medicine for May, 1907, and a few tablets of scopolamin, and in due time she returned the journal and said the drugs had worked just as successfully in the hands of the doctor at Hay, Wash., as when I used them on her.

My first case with twilight sleep was on May 26, 1907, a peasant German woman who had had three babies, the fourth to arrive. She knew absolutely nothing of the labor nor of the delivery. This case was handled in miserable surroundings, with only the members of the family present. The second case was May 30, 1907, the patient 37 years old, a school teacher, giving birth to her first child. After the first injection of the anesthetic she lay with her head on her hand and merely grunted as the pains came on, sleeping between the pains until delivery was effected. The child weighed eight pounds; the husband and myself were the only ones present with this case.

It is very essential to have pure scopolamin, and to use judgment in the size and repetition of the dose, but with these in mind scopolamin-morphin can be used anywhere in obstetrical practice. The method is in my judgment a wonderful help to the parturient woman.

C. A. Ferris, Denver (closing): It takes a great deal of moral courage to be a pioneer in any field of medicine, and the use of scopolamin is no exception to the rule. As I said in the beginning of my paper, I am not an enthusiastic booster, nor do I disparage the use of it. I have a great horror of the use of morphin in labor from my experience in resuscitating children in our Caesarean sections. We find that where morphin has been used to control eclampsia, there has been a great deal of asphyxiation due to morphin. It is not in my experience so with regard to the use of scopolamin. I first started using very small doses of morphin combined with scopolamin; then I left the morphin out entirely and I am now using a small amount of the opium derivative, codein phosphate, which is supposed theoretically to be less toxic than morphin sulphate. With one or two initial doses, and with constantly decreasing doses of scopolamin, it is really wonderful what favorable results you can get in selected cases. Of course, there is a great deal of investigation yet to be done in regard to this matter. Dr. Moore says it is not absolutely necessary to use this in a hospital, but if you are going to get the classical results which they obtain by Dämmerschlaf in Freiburg, you must have the classical conditions such as they had when they made their experiments. But you can use partial twilight sleep by scopolamin even though you do not get the true Dämmerschlaf. Outside of hospitals one may get fairly good results, but for its classical administration it is necessary to have these patients in a hospital.

A CASE OF AKROMEGLAY WITH A MEDIASTINAL TUMOR.*

JOHN INGLIS, A.M., M.D.

This boy was referred to me for treatment for chronic rheumatism—whatever that is. He is 21 years of age. His family history is negative, five sisters, four brothers living in perfect health. He himself has had no diseases since childhood until January, 1915, when his hands and feet “began to swell”.

An ocular examination of these hands and feet shows that they are not “swollen” in the ordinary sense of that word. They are symmetrically enlarged.



Wassermann reaction is negative. Urinalysis negative. Blood count, 6,000 whites, 4,000,000 reds. Blood pressure, 115 mm. Hg.

This is a typical case of akromegaly with a mediastinal tumor. The two conditions are distinct and so far as we know are not correlated. Akromegaly is equally frequent in both sexes, but is most common between 30 and 40 years of age. It is rare under 20. There is no known cause. Most cases show some lesion of the pituitary gland. The

*Case shown before the Medical Society of the City and County of Denver, December 7, 1915.

modern conception is that it is a disease of the pituitary gland. This condition with the mediastinal tumor must be differentiated from pulmonary hypertrophic osteoarthropathy. In the latter we have a very rare disease, and there is a long standing disorder of the lungs, which this case does not present. The only cases of hypertrophic pulmonary osteoarthropathy I have ever seen have been among the Chinese.

A reference to the X-ray photograph will differentiate this case beyond doubt.

In pulmonary arthropathy the enlargement of the bones is at the ends, the terminal phalanges of the feet and hands being involved. In the only two cases seen by me the finger ends were bulbous with the nails curved over them. The bones of the face and the long bones of the arms and legs were not involved. An examination of this case shows that the bones of the face are involved, and a look at the X-ray photograph shows that the enlargement of the bones is due to a periosteal overgrowth. This of itself serves to differentiate akromegaly from pulmonary hypertrophic osteoarthropathy.

On examining this boy I found the superficial vessels of the abdomen greatly enlarged. There is also more or less enlargement of the neck. On examining his chest I found an irregular area of dullness under and around the sternum. This led to a suspicion of mediastinal tumor, which was confirmed by the X-ray. The only symptom this boy has shown of the pressure of such a tumor is dyspnea on exertion.

We are naturally anxious to determine what this tumor is. Benign tumors of the mediastinum such as fibroma, lipoma and chondroma are rare. The more common tumor is the sarcoma. The chances are that this is a sarcoma which has developed from an old thymus gland.

The prognosis of this case is very bad. While he might live for years with the akromegaly, the pressure symptoms of the mediastinal tumor are beginning to manifest themselves. I should have said that the testicles are atrophied. This is common in akromegaly.

As to treatment for this combination, there is none to offer.

808 Majestic Building.

FUNCTIONAL RESULT OF ASTRAGALECTOMY IN INFANTILE PARALYSIS.

ROBERT G. PACKARD, M.D., DENVER.

This article is intended to investigate the value, as expressed by the end-result, of the operation of astragalectomy, when done for cases of disability of the foot and ankle following more or less severe attacks of infantile paralysis. The cases were studied from a series operated on at the Boston Children's Hospital during the five-year period 1909 to 1913 inclusive. There has now elapsed a post-operative period of one to six years. Sixteen cases were available for observation, cases giving varied histories of partial or complete loss of function of various muscles.

The length of time elapsing between the attack of paralysis and the operation varied considerably; one case being operated on at two years, two at three years, four at four years, and so on, two being operated on at eleven years after the attack. In many of the cases in which a considerable space of time intervened, certain other operations had been performed, operations which had proved to be rather unsuccessful and where there still remained distinct indications for further operative interference.

The operation of astragalectomy was first advocated in 1901 by Dr. R. Whitman* of New York for cases of calcaneo-valgus. But almost immediately the operation met with wider application, and for the last six years at least it has been used in various deformities of the foot showing lack of stability that did not promise suitable correction by muscle transplantation alone. Thus these sixteen cases represented varied deformities of the foot, as follows:

Totally flail ankles.....	6
Calcaneo-valgus	6
Equino-valgus	2
Equino-varus	1
Simple varus	1

Unfortunately these various deformities were often accompanied by more or less severe paralysis of the muscles of the corre-

*R. Whitman: Am. Jour. Med. Sc., 1901, cxxii, p. 594.

sponding leg and thigh, or of the opposite foot, thereby rendering impossible an otherwise exact analysis of the foot condition before and after operation. Complicating paralyses existed as follows in the sixteen cases:

Paralysis of quadriceps.....	6
Weak quadriceps and hamstrings....	5
Paralysis of glutei and adductors....	3

Consequently it is also difficult after the operation to confine observations to the foot, inasmuch as oftentimes an apparently good or bad result, as compared with the former condition, depends to no small degree upon the improved or unimproved power of the muscles of the hip and knee.

From the above groupings it is seen that the operation has been performed not only for calcaneo-valgus, but also for widely different affections.

The operation consists essentially in the complete excision of the astragalus more easily in three portions, and the displacement backward of the foot, "in such a way that the external malleolus may cover the calcaneo-cuboid joint, and that the internal malleolus may be forced into the depression behind the scaphoid". The foot is now held in moderate equinus, and the whole limb fixed in plaster of Paris for four to six months. Some slight changes have been made in the technique since Whitman first described it. Thus originally the foot was placed in extreme equinus, and the articulating surfaces of the ankle joint scarified and curetted so as to secure ankylosis, but now the astragalus is removed subperiosteally; that is, the lateral, anterior and posterior ligaments are all divided beneath the periosteum, and there is no shaving or curetting of contiguous bony structures.

The designs of the operation are manifold: First, the securing of lateral stability, accomplished by removing the astragalus, setting the articulating bones of the leg deeper into the tarsus, and making the foot more shallow. Secondly, the obtaining of better antero-posterior balance, by changing the ankle from an "L" position to an imperfect "T" position when the foot is displaced backward. Thirdly, the overcoming of the shortening, brought about in part at least by the equinus position. Fourthly,

the preventing of ankylosis, obtained by doing the operation subperiosteally.

With such considerations in view, the ideal foot, that is, the foot we should like to produce as far as possible by the operation, must have the following attributes: the heel more prominent posteriorly than the normal, the tarsus held firmly in no varus or valgus, but in slight equinus position at an angle of about 100 degrees with the leg, the metatarsus in slightly more equinus, giving incidentally some element of cavus, and the foot measuring not more than an inch and a quarter shorter than its mate, and not more than a fraction of an inch shallower when measured from the tip of the malleoli to the ground. In passive movements we wish to find practically no lateral motion, but in flexion and extension an arc of perhaps 10° to 25° of motion, which will allow the foot to come up to a right angle when supporting the body weight. The muscle power of course will vary according to the previous picture, but the operation should encourage the action of most groups, especially that of the flexors and extensors because the reformed position is more natural for muscle play, and secondly, because the foot is brought into greater passive exercise when walking is indulged in.

The degree of success or non-success then in these sixteen cases will depend upon the following attributes:

1. Lateral stability. This is by far the most important factor, and in these cases it was secured to a considerable degree in all instances, as follows:

0° of lateral motion in 4.
5° of lateral motion in 6.
15° of lateral motion in 4.
20° of lateral motion in 2.

2. Absence of valgus or varus. These functional deformities were very well corrected, the sixteen cases giving the following figures:

Slight varus	2
Moderate valgus	3
No varus or valgus.....	11

3. Correction of foot-drop. Though the operation anticipates some 10° or 15° of equinus, yet further foot-drop is one of the important items to be corrected. In this re-

spect the figures do not show quite such good returns:

Equinus of 10°.....	1
Equinus of 15°.....	3
Equinus of 20°.....	2
Equinus of 30°.....	2
Equinus of 35°.....	3
Equinus of 45°.....	3
Equinus of 80°.....	2

4. Limitation of passive motion in flexion findings. In certain instances the real functional result would be hidden by the inadequacy of the muscles of the hip and knee, but once analyzed, the end-result at the ankle could be ascertained. By using the various readings above, it was determined that the results could be safely stated as and extension. Passive movements were found mostly to occur at the tarso-metatarsal joints. The arcs of passive movement varied from 10° to 70°, half of the cases showing arcs of only 10° or 15°.

5. Shortening. The amount of shortening of the length and depth of the operated foot must be considered a factor in the functional result, though a very minor one. The operated feet measured 0" to 1¼" shorter than their mates, and ¼" to 1" shallower than their mates.

The functional result, then, of the operated foot has to be a composite of the above

Excellent functional result.....	4
Good functional result.....	6
Fair functional result.....	6

In every case where it was possible to interview them, the parents made the statement that the child showed more efficient control of the extremity than before.

Thus the operation of astragalectomy for partial or complete paralysis at the ankle has demonstrated its efficiency very satisfactorily; provided there are observed the fundamental elements, namely, lateral stability, correction of foot-drop, and limitation of passive movement, whether muscle power is present or absent.

216 Metropolitan Building.

PNEUMONIA.

(Editorial Note.—The present-day tendency among physicians and certain classes of the laity is probably rather to exaggerate the importance of infection as compared with the powers of resistance of the individual. The following bulletin issued by the United States Public Health Service

classically epitomizes those factors of reduced resistance which play so great a part in that kind of common acute infections—pneumonia. Almost all of us should spend more time and energy in advising our patients as to the prevention of disease.)

Ten per cent of the deaths in the United States result from pneumonia. It is estimated that during the past thirty days this rate has been doubled in some sections. Tuberculosis and heart disease, each causing one-ninth of all fatalities, are the only diseases which outrank pneumonia among the legion of the men of death, but in certain cities pneumonia is steadily increasing and even has surpassed the mortality from tuberculosis. Seventy per cent of all cases occur between December and May. It is distinctly a cold-weather infection, seemingly brought by wintry blasts, but especially prevalent during the winter season only because its victims are rendered more susceptible at that time by exposure, debilitating influences and the presence of predisposing infections.

Pneumonia principally affects those at the extremes of life, but no age is exempt. It is invariably a germ disease. The predisposing and exciting organisms are so numerous that it would be futile to attempt their enumeration. Many of them are constantly present in the mouths and throats of healthy persons and it is only through the aid which we unwittingly extend to them that they are transformed from harmless organisms to one of man's most powerful enemies.

The presence of other diseases is the great predisposing cause of pneumonia. They prepare the soil for invasion. Holding first rank in this category is influenza, the increased incidence of pneumonia at this time being largely due to the present epidemic of la grippe. Individuals suffering from this infection are peculiarly susceptible to respiratory complications and should properly observe every hygienic rule. Inflammation of the upper air passages, pharyngitis, bronchitis and tonsillitis, often predispose to the development of the disease, particularly among the aged and infirm. The acute contagious diseases of childhood, more especially measles and whooping cough, frequently prepare the way for pneumonia. Anyone who through neglect or carelessness permits the spread of these infections is therefore open to the severest condemnation. Exhausting disease of whatever nature, is often sufficient to so reduce our resistance that we are unable to cope with organisms which should be easily overcome, and hence predisposes to the infection.

Debility, either temporary or chronic, developing from any cause, increases susceptibility. Because of this the disease most often attacks those at the extremes of life. Among debilitating influences must be mentioned cold, exposure to penetrating winds and the chilling of body surfaces as a result of wetting. The combination of lack of food and fatigue proves particularly disastrous during the winter season and is a condition to be avoided whenever possible. Bad housing, mental or physical harassment and overwork are alike the advance agents of the infection. Overcrowding, in street cars, theaters and other public places, is unquestionably in part responsible for the spread of pneumonia in cities, as far greater opportunity is thus offered for the dissemination of the predisposing diseases through indiscriminate coughing and other means of droplet infection, as well as the directly injurious effects which inevitably result from exposure to such environment. The overheating of rooms is also seemingly harmful. Promiscuous expectoration may be, and probably is, a factor in infection and consequently

should be avoided by every citizen. A remaining most important agent should be mentioned—alcohol. It is in truth the handmaiden of pneumonia, and there is none more certain or more sure of success, especially if liberally and continuously used.

While the foregoing facts constitute in part our knowledge of the reasons for the widespread dissemination of an infection which carries with it a mortality of from 10 to 30 per cent, it should be remembered that our scientific data are not yet complete. There are problems connected with immunity, predisposition and the occurrence of epidemics which are yet to be solved. It is known that pneumonia frequently attacks those who are perfectly well, and who apparently have observed every hygienic rule. Whether this is due to the increased virulence of the organism or to other causes is unexplained. It is, however, recognized that avoidance of the factors so briefly enumerated will in large part diminish individual susceptibility and therefore the incidence of the disease.

News Notes

The whole medical profession of the United States will be grieved to learn of the death on March 8th of Dr. W. L. Rodman, late president of the American Medical Association, from a pneumonia of only two days' duration. Only last summer Dr. Rodman gave a very able and well-attended address before the Denver County Society.

The Chicago Medical Society announces the fifth annual meeting of Alienists and Neurologists of the United States, to be held under the auspices of the society June 19-23, 1916, at the La Salle Hotel, Chicago. Among other subjects of interest to be considered at the meeting will be that of feeble-mindedness, as dealt with in the reports of committees from the various states.

One of the most useful of philanthropic institutions in the United States is the National Committee for the Prevention of Blindness, 310 East Twenty-second Street, New York City. "Half of all blindness can be prevented," says this committee at the head of one of its leaflets, and an appeal is made for membership subscriptions to help in the movement toward the prevention of blindness. The committee circulates a large number of publications on the subject, furnishes materials for lectures, including lantern slides, promotes legislation, and arranges for local exhibits.

Dr. Edgar Hadley has given up his work at Telluride on account of ill health, and has located at Montrose. Dr. Fred G. Klotz has taken over Dr. Hadley's hospital and professional interests at Telluride.

An excellent course of free lectures on the prevention of disease is being conducted by the Public Health Education Committee of the New York County Medical Society.

A recent report of the United States Public Health Service throws cold water on the belief that various preparations of ipecac, including emetin, afford a cure for pyorrhea alveolaris.

Dr. George A. Boyd, president of the El Paso County Medical Society, arranged a dinner for members of the society and others on February 26th, at which the general subjects for discussion related to medical history. The principal speakers were Dr. N. R. Noble, Colorado Springs, and Dr. C. E. Edson of Denver, the respective titles of the addresses being "Indian and Chinese Medicine" and "A Pilgrimage to Chelsea."

Parliamentary Rules—

In Denver 'tis whispered of late
That Roberts's rules of debate
(Since the medical car
Has been run by the Czar)
Have decidedly gone out of date.

Dr. S. D. Van Meter, Denver, has removed his offices to the Majestic Building.

Dr. J. A. Matlack of Longmont is spending a year as assistant to the Mayo Clinic, Rochester, Minn. Dr. Matlack expects to return to Longmont, where he has practiced for ten years, after the expiration of his term in Rochester.

The annual report of Dr. S. R. McKelvey, secretary of the State Board of Health, gave the following figures as to the relative frequency of the various diseases named during 1914 and 1915, respectively: Diphtheria, 720 and 558; scarlet fever, 1,227 and 1,273; small pox, 440 and 200; typhoid fever, 639 and 600; measles, 4,415 and 679; whooping cough, 281 and 1,079; chicken pox, 647 and 1,443.

Dr. C. B. Lyman gave an address on modern methods in surgery before the annual meeting of the Colorado State Trained Nurses' Association.

The five Denver city and county physicians recently issued a joint letter emphatically protesting against a charge in the public press to the effect that they had been making improper use of city automobiles and supplies. The letter stated that the five physicians used their own cars and bought their own supplies in doing the city's work.

Working in cooperation with the National Association for the Study and Prevention of Tuberculosis, Dr. F. R. Coffman, Denver deputy health commissioner, is attempting to obtain systematic information as to the facilities afforded by Denver boarding-house keepers for the care of those who are sent to Colorado in search of health.

Coroner's juries composed of physicians have now been called by Dr. Sherman Williams, Denver coroner, in three cases of death alleged to have followed illegal operations for abortion. In two cases the operations had been performed by Dr. Bennett Graff, and in the third instance by Dr. Noble Hamilton. In each case the jury returned a verdict holding the physician responsible for the death of the patient.

A committee of the Professional Women's Club of Denver is acting as the nucleus of a new organization, the object of which is to stimulate interest in the subject of feeble-mindedness. Dr. Alexander Johnson, field worker of the National Committee on Provision for the Feeble-minded, will be in Denver on the 15th, 16th and 17th of April under the auspices of the local organization. He will probably address a public meeting on the subject at the Woman's Club on Saturday evening, April 15th, and on Monday, April 17th, the City Federation will listen to a further address by Dr. Johnson after a dinner at the Shirley Hotel.

Dr. Cyrus L. Pershing has been appointed chairman of the publicity committee of the Colorado committee on provision for the feeble-minded. Dr. Pershing made a statement on the subject before the Denver Ministerial Alliance on March 6th.

Dr. Chas. A. Powers has gone to Florida for a rest. After attending the American Congress of Physicians and Surgeons in May, Dr. Powers will leave for Paris, France, to take up a post at the American Hospital.

At a meeting held in Chicago, in relation with the Council on Education of the American Medical Association, in the early part of February,

Dr. David A. Strickler was elected president of the Federation of State Board of Medical Examiners, an organization made up of the various medical examining boards in the United States for the purpose of considering matters of common interest.

Dr. J. W. Rambo, a pioneer practitioner of Fremont County, died at his home in Canon City on February 11th. Dr. Rambo was born in Iowa in 1852. He leaves a wife and an adopted daughter.

By the withdrawal of Dr. E. J. Murray, Dr. Morse is now sole proprietor of the San Luis Valley Hospital at Alamosa.

Former Mayor J. M. Perkins recently stated that, whatever further changes might be made in the form of Denver's government, he would not be a candidate for re-election. He declares that his term of office ruined his stomach and his finances.

Dr. W. A. Jolley recently received a visit from Dr. N. T. Lane of New York City, who was for some time one of Dr. Jolley's colleagues in Serbia.

A report recently published from the pen of Dr. Chas. V. Chapin, who made a survey of health boards under the auspices of the American Medical Association, criticizes the Colorado State Board of Health as being too much under the influence of politics, and declares that the department should be entirely reorganized along lines which should be kept free from politics. The report also advises the appointment of an executive who could give his whole time and energy to the department.

Dr. H. R. Coffman, Denver Deputy Health Commissioner, has ruled that children attending school for the first time must present certificates of health and sickness.

Dr. F. C. Cochran, aged 65 years, died at Arvada on February 18th. Dr. Cochran had retired from practice some years ago.

Dr. J. W. Brown of Las Animas was married on February 21st to Mrs. Mabel Hagar of Eaton, Colo.

The Colorado State Board of Medical Examiners has already fixed a date for proceedings for cancellation of the license of Dr. Bennett Graff, who is accused of responsibility for the death of two patients as the result of criminal abortion.

Dr. H. B. Favill, of Pueblo, died in the latter part of February in Springfield, Mass., from pneumonia. Dr. Favill was 55 years old and a graduate of Rush Medical College. He was proud of the fact that he was a direct descendant of a chief of the Ottawa Indians. It is said that when asked if he could not qualify for membership in the Mayflower Society, he replied in the negative, adding, "My people were on the reception committee that welcomed the Mayflower".

Dr. J. C. Blickensderfer died at his home in Denver on March 4th, aged 68 years.

Dr. Blickensderfer was continuously a member of his county medical society for thirty-seven years. Originally in business in Denver from 1870 to 1876, he studied medicine in St. Louis, and practiced in Denver from 1879 until his retirement in 1903.

A discussion which took place recently in the coroner's court in Denver showed that several physicians present were under a misapprehension as to the nature of what is known as a privileged communication. Legal rulings were cited to show that for a communication from patient to physician to be privileged (that is to say, protected from disclosure in a court of law), the information conveyed must have been necessary to the physician in his professional conduct of the case.

The New York Department of Health announces that, as has been found elsewhere, the streptococcus played a leading rôle in the outbreak of grip and pneumonia which recently visited that city. This organism was found in large numbers in 26 of 50 specimens examined; pneumococcus was present in 19 cases, the micrococcus catarrhalis in 18, and the influenza bacillus in 9.

Dr. Leonard Freeman has been back several weeks from a month's visit to Honolulu, which he had not seen for twenty-five years.

Dr. W. W. Jones is on a visit to the Bermudas.

Work is being commenced on the new quarter-million-dollar Children's Hospital in Denver.

Changes in the staff of St. Luke's Hospital, Denver, include the appointment of Dr. Philip Hillkowitz as pathologist, of Dr. J. W. Amesse as pediatricist, and of Dr. D. H. Coover as ophthalmologist.

El Paso Notes.

Dr. L. G. Brown has returned from the meeting of the American Roentgen Ray Society.

Dr. W. G. Smith, formerly of Breckenridge, has located in Colorado Springs.

Dr. Knowles, house physician at St. Francis' Hospital, makes regular trips to Florissant.

Dr. A. A. Blackman is spending the month in Florida.

A special meeting of the El Paso County Medical Society was held at the library February 26th. There was a large attendance, dinner being served at 7 p. m. Dr. Mary Riggs Noble of Colorado Springs gave a very interesting and instructive talk on "Chinese and Indian Medicine". Dr. C. E. Edson of Denver talked on "A Trip to Chelsea". Drs. Epler and Singer of Pueblo and Hillkowitz of Denver were guests.

Medical Societies

CITY AND COUNTY OF DENVER.

The regular meeting of the Medical Society of the City and County of Denver was held on February 15, 1916, President Dr. Henry Sewall in the chair.

Drs. C. O. Eigler, R. M. Shea and A. C. Smiley were elected to membership.

The resignation of Dr. C. G. Parsons was received and accepted with regret.

Dr. H. R. McKeen presented a very interesting case of an unusually large urethral calculus (about size and shape of a small pear) which had sloughed through and discharged spontaneously at the peno-scrotal junction in a 6-year-old Indian boy.

Scientific program for the evening: Symposium on the Recent Epidemic of Respiratory Disease in Denver. The Disease as Reported from Other Places, C. N. Meader, M.D.; Symptoms, Diagnosis and Clinical Course, J. N. Hall, M. D.; Bacteriology, W. T. Burdick, M.D.; Pathology, H. F. Craig, M.D.; Relation to Pulmonary Tuberculosis, J. J. Waring, M.D.; Treatment, C. E. Edson, M.D. The symposium was very interesting and enjoyed by an unusually large attendance.

C. F. HEGNER,
Reporter.

EL PASO COUNTY.

The regular monthly meeting of the El Paso County Medical Society was held at the library in the Elks Home, February 9, 1916, at 7 p. m., dinner being served before the business meeting.

with the President, Dr. Boyd, in the chair, and fifty members and three visitors present.

Dr. Harry P. Chesmore was elected to membership in the society.

A letter from Mrs. Alexander Perry was read thanking the society for its expression of sympathy at the time of Dr. Perry's death.

The following resolution was introduced by Dr. Swan and adopted:

Resolved: That the El Paso County Medical Society regards highly any effort to study and help provide suitable occupations for invalids; and that it will give its support to the establishment and proper conduct of an institution which shall have these aims, provided thorough investigation of local conditions and the study of plans for such an undertaking show it to be feasible.

Dr. Peters presented a case of glanders in a woman, a resident of the farming country east of town. Dr. Gilbert reported the bacteriological aspect of the case, stating that he had demonstrated the *Bacillus Mallei*.

Dr. Schofield spoke in regard to the fact that the United States government does not spend much money on the Medical Department of the Army and Navy, and thought that some action should be taken to have this branch of the service improved.

Program. The Recent Epidemic of La Grippe: Introduction and Etiology, Dr. Gilbert; Geographic Distribution, Dr. Gillett; Type, Complications and Treatment, Dr. Schaefer; Upper Respiratory Complications, Dr. Dennis. Discussion: Drs. Goodson, Madden, Miller, Stevens, Swan, Peters, Arnold, Webb, Vanderhoof, McConnell and Stewart.

GEORGE B. GILMORE,

Secretary.

LAS ANIMAS COUNTY.

The Las Animas County Medical Society met Friday evening, February 4th, 1916. The members present were:

Drs. Ed. Burkhard, C. O. McClure, J. R. Espey, J. G. Espey, H. C. Lee, A. J. Chisholm and L. T. Richie.

Several applications were presented for membership, and were referred to the Board of Censors. Dr. John Espey read a very commendable paper on Fractures, which covered the subject very thoroughly, and was discussed by Drs. James Espey, C. O. McClure, Ed. Burkhard, A. J. Chisholm and L. T. Richie.

A. J. CHISHOLM,

Secretary.

LAS ANIMAS COUNTY.

The regular meeting of the Las Animas County Medical Society was held Friday evening, March 3rd. Those present were Drs. Ed Burkhard, L. R. Espey, J. G. Espey, C. W. Presnall, L. T. Richie and A. J. Chisholm. We had as our guests Dr. T. A. Stoddard of Pueblo and Dr. R. W. Corwin of Pueblo.

Dr. Stoddard addressed the members on the "Prevention of Cancer." This was thoroughly discussed by all present. Dr. Corwin in his usual eloquent manner addressed the members on the very interesting subject, "Eugenics". Dr. Burkhard read a paper on the "Management of the Third Stage of Labor", which brought out a heated discussion from those present.

We elected Drs. O. F. Adams, Joseph W. Davis, Elum M. Russell and C. F. Brewer to member-

ship. The meeting was brought to a close after spending a very profitable and enjoyable evening.

A. J. CHISHOLM,

Secretary.

NORTHEAST COLORADO.

The Northeast Colorado Medical Society met in regular session Wednesday, February 1st, President Dr. J. K. Dawson presiding.

An amendment to the constitution was passed increasing the local dues of the society.

Dr. J. H. Naugle was the essayist and read a very valuable paper on pneumonia. The discussion was opened by Dr. Babcock, followed by other members present.

Alcohol was given a hard rap in the discussion, although some government literature seems to value this remedy in treatment of the disease.

MYRON L. BABCOCK,

Reporter.

The Northeast Colorado Medical Society met in regular session Wednesday evening, March 1st, in the Sterling City Hall, President Dr. J. K. Dawson presiding.

Dr. J. C. Chipman read a paper on digitalis, covering this valuable drug in a very thorough manner. Dr. Wm. Greig opened the discussion, followed by Drs. Bush and Babcock.

Dr. M. R. Fox gave an address on vital statistics, urging more care on the part of the physicians in making up their records of births and deaths.

It was decided to begin an active campaign for the building of a hospital for Sterling, and a committee was appointed by the chair to wait on the county commissioners and see what could be done in the way of securing a county hospital.

MYRON L. BABCOCK,

Reporter.

OTERO COUNTY.

The Otero County Medical Society met in regular session at the Santa Fe Hospital in La Junta on Monday, February 14, 1916, at 8:30 p. m., with Dr. Frank Finney presiding. Dr. Ralph W. Mendelson gave a very interesting talk upon his experiences in Serbia with the Rockefeller Foundation and the American Red Cross. He was a sanitarian under Dr. Strong and was in charge of a hospital unit at the front during the Serbian retreat, so that he was able to give much valuable information concerning typhus fever and war surgery.

R. S. JOHNSTON,

Reporter.

COLORADO OPHTHALMOLOGICAL SOCIETY.

The regular meeting of the society was held February 12, 1916, at the office of Dr. H. R. Stilwell, who presided.

Dr. W. H. Crisp presented two cases, (a) bullet injury of the eye and (b) lime burn of an eye, and also made report of an anomalous case in which the right lower temporal artery was a cilioretinal vessel.

Dr. W. F. Matson showed a patient with glaucoma.

Dr. W. C. Bane exhibited a patient with dislocated lenses and atrophic irides.

Dr. Finnoff presented a baby 2 years of age, with congenital entropion.

Dr. Melville Black presented four patients, showing (a) retinitis proliferans; (b) bilateral

dislocation of the lenses; (c) blepharochalasis; and (d) leucoma adherens.

Dr. D. H. Coover presented a patient showing the rare condition known as Parinaud's conjunctivitis; also a rather unusual case of hypertrophy of the caruncle.

Dr. H. R. Stilwill exhibited a case showing vitreous hemorrhage.

Dr. J. J. Pattee made full report of a case of glioma.

Of much interest to those present were the excision of the tarsal cartilage with underlying conjunctiva, for trachoma, and a Ziegler operation for entropion, performed by Dr. D. H. Coover.

E. T. BOYD,
Secretary.

DENVER MEDICAL SCIENCE CLUB.

The Medical Science Club met in regular session on February 11th, 1916, at the offices of Drs. Carmody and Finnoff. Drs. Lingenfelter and Matthews presided in the absence of Dr. Fowler. Attendance 22.

Dr. Preston presented a patient showing the result of an open operation after a splitting fracture of the tibia near the ankle. The result was perfect and after fifteen weeks the patient was back at work as a lineman.

The Secretary reported all bills paid to date and he was given permission to adjust payment of dues and outstanding indebtedness to members for previous entertainment.

It was resolved that the chair appoint a committee consisting of the three last former secretaries of the Club, to codify the by-laws of the organization. It was also resolved that the Club hold one meeting each month for the balance of the year (March, April and May, 1916).

Reports of cases—Dr. Canby reported the case of a woman previously operated on for appendicitis, showing symptoms of duodenal ulcer and post-operative adhesions.

Dr. Crisp reported the case of a boy shot in the right eye with a .22 caliber toy cannon. The bullet was shown by X-ray to be lodged near the angle of the right jaw.

Dr. Crosby showed an X-ray plate of probable osteo-sarcoma of the right scapula, and one of fracture of the humerus near the shoulder, which had been treated for dislocation.

Dr. Carmody reported several cases of Ludwig's angina, showing photographs.

H. G. GARWOOD,
Secretary.

SOLLY TUBERCULOSIS SOCIETY.

The annual meeting of the Solly Tuberculosis Society was held at the El Paso Club, Colorado Springs, on Tuesday, February 29, 1916. Following the usual luncheon, the election of officers took place, and resulted in the election of Dr. Gerald B. Webb as president; Dr. J. F. McConnell, Vice President, and Dr. H. Trossbach, Secretary-Treasurer.

Programme: "A Review of the Recent Literature of Tuberculosis", Dr. E. D. Downing, with special reference to advances in pathology. Dr. A. M. Forster spoke for Dr. F. M. Houck (who was unable to attend) on the diagnosis. Dr. Gerald B. Webb, "Prevention and Treatment". Discussed by Drs. Bortree, L. G. Brown, Campbell, McConnell and Crouch.

H. TROSSBACH,
Secretary.

Book Reviews

Painless Childbirth Eutocia and Nitrous Oxid-Oxygen Analgesia. By Carl Henry Davis, A.B., M.D., associate in Obstetrics and Gynecology, Rush Medical College in affiliation with the University of Chicago; assistant attending Obstetrician and Gynecologist to the Presbyterian Hospital, Chicago. Chicago, Forbes & Company, 1916.

Dr. Davis in this little book discusses what is without doubt the best method of producing so-called painless labor.

About ten years ago, Dr. J. Clarence Webster of Chicago was one of the first, if not the first, in America to use nitrous oxid in labor. At that time it was used only in those cases in which chloroform and ether were contraindicated, in operative obstetrics. Later, because of such good results, it was administered to lessen pain in the second stage; but since 1913 it has been used at the Presbyterian Hospital in Chicago throughout the first and second stages with results which lead to the following conclusions: Labor is rendered relatively free from suffering; nitrous oxid-oxygen may be used in practically all classes of cases; it may be used in conjunction with different drugs—morphin, heroin, chloral hydrate, and pituitrin; it is safe in the hands of any physician who understands its proper administration; it has no injurious effect on the child; those who have this anesthesia have shorter labors and do better afterwards, the length of the labor being reduced about twenty-five per cent; the supply of milk is not diminished; the number of lacerations in the series reported was decreased. The technic of its administration is discussed at length.

Dr. Davis discusses the dangers and disadvantages of "twilight sleep" or "Dämmerschlaf", and makes a plea for better methods in obstetrics, quoting numerous statistics, regarding mortality and morbidity during childbirth, which it would be well for the layman to read. C. B. I.

Principles and Practice of Physical Diagnosis. By John C. Da Costa, Jr., M.D. Third Edition. Octavo of 589 pages with 243 original illustrations. W. B. Saunders Co., Philadelphia. Price, \$3.50.

Dr. Da Costa's third edition is a great improvement on the last two and deals with phases of physical diagnosis up to the minute. The work is simple enough for beginning medical students, yet comprehensive in its design to refresh and stimulate the practitioner.

The cardiovascular system is especially well treated, and cardiograms and electrocardiograms are minutely explained, with illustrations of tracings taken from various heart conditions. The chapters dealing with the mechanism of murmurs and cardiac arrhythmias are well written.

Vertebral percussion, sphygmomanometry, gastric radiography and mediastinal pleurisy are discussed from a clinical standpoint.

In short, the book contains from the old editions all that is good and necessary to the exact diagnosing of pathological conditions, and also much that is new and not yet correlated into a one-volume work, making this particular diagnosis desirable and useful to all students and practitioners of medicine. R. H.

A Treatise on the Principles and Practice of Medicine. By Arthur R. Edwards, M.D., Professor of the Principles and Practice of Medicine and Clinical Medicine and Dean of the Northwestern University Medical School, Chicago. New (third) edition, thoroughly revised. Octavo, 1022 pages, with 80 engravings and 23 full-page plates in colors and monochrome. Cloth, \$6.00, net. Lea & Febiger, Philadelphia and New York, 1916.

This edition, the third, has been thoroughly revised and carefully re-edited by the author, with the result that the space of the original editions is decreased by some 200 pages.

The essential foundation of the work has been the personal experience of the writer in hospital, private practice, and the class room, correlated with the general experience of the profession as expressed in its literature.

The system exhibited throughout the work in the presentation of the various main divisions of disease through the various subordinate paragraphs, is a most thorough one. The growth of medical knowledge since the last edition has necessitated the incorporation of much new matter, such as high caloric values in typhoid diets, the cardiac neuroses and sepsis.

Quoting the author, "the final object of the book's existence is the application of knowledge to the cure or alleviation of disease". Hence a large amount of space is devoted to treatment, to the detailed consideration of drugs and to numerous formulæ and prescriptions. W. W. J.

Transactions of the American Pediatric Society, Vol. XXVII. Edited by L. E. La Fetra, M.D., New York.

The 1915 meeting, held at Lakewood, N. J., May 24 to 26, was one of the most successful the Society has ever held; both from the standpoint of attendance, fifty out of seventy members being present, and the character of the papers. Thirty-two papers were read and discussed, and three papers read by title. It would be difficult in this brief notice to select any papers for special comment, since they were all of a very high order.

Particular interest, however, attached to the reports of the special committees on vulvo-vaginitis in children, and on child labor. The former committee sent out a series of questions to: 1, Health Officers, Cities and States; 2, Physicians; 3, Pathologists; 4, Hospitals; 5, Children's Homes, Training Schools and Asylums; 6, Gynecologists, and 7, Social Service Departments in Hospitals and Visiting Nurse Societies. The data obtained should prove very helpful in combating the progress of this most trying infection in children.

While the committee on child labor was only able to report progress, their report that "it may be stated that direct evidence as to the effect of labor on children, as shown by careful studies on working children covering a period of years, is practically nonexistent," shows the necessity for intelligent investigation of this serious problem by a body of such eminent standing as the American Pediatric Society. F. P. G.

Obstetrics. A practical Text-Book for Students and Practitioners. By Edwin Bradford Cragin, A.B., A.M. (Hon.), M.D., F.R.C.S.; Professor of Obstetrics and Gynecology, College of Physicians and Surgeons, Columbia University, New York, etc. Assisted by George H. Ryder, A.B., M.D., Instructor in Gynecology, College of Physicians and Surgeons, Columbia University, New York, etc. Octavo, 853 pages, with 499

engravings and 13 plates. Cloth, \$6.00 net. Lea & Febiger, Philadelphia, Pa.

It is with gratification that we receive from Dr. Cragin, a recognized leader in obstetrics, a text-book on the subject. We have long wanted to have in writing his ideas and the results of his observations during a protracted service in the Sloane Hospital for Women, where over eighteen hundred deliveries occur annually. This work is based on statistics, results from the Sloane Hospital, and upon personal experience in his private practice. There occur such valuable statistics as results of study of infant mortality from the records of ten thousand cases, and results of the different operative procedures occurring at the Sloane Hospital.

The arrangement of the chapters is excellent, the illustrations are clear and serviceable. Recognizing that the text-books now before the profession are too large for the undergraduate student, the subjects are treated concisely and practically, eliminating useless discussions, although references to important articles on most of the subjects are given. C. B. I.

The Practical Medicine Series. Vol. IX. Skin and Venereal Diseases. Edited by O. S. Ormsby, J. H. Mitchell and H. N. Moyer.

This volume presents a comprehensive review of recent additions to dermatologic knowledge, including descriptions of a number of dermatoses not found in the usual text-book. The references are particularly valuable and furnish a working index to the literature of this subject for the past year.

The exposure and hardships of the war have brought into prominence a number of disorders of the skin with which the modern physician is quite unfamiliar, some of which conditions are considered here in the light of modern knowledge.

The section on venereal diseases presents nothing particularly new, but the methods of treating syphilis, as modified by the discoveries of the past few years, have been fairly well standardized and are now presented in a manner that permits of their practical application. A. J. M.

A Practical Treatise on Infant Feeding and Allied Topics, for Physicians and Students. By Harry Lowenburg, A.M., M.D., Assistant Professor of Pediatrics, Medico-Chirurgical College of Philadelphia. Illustrated with 64 text engravings and 30 original full-page plates, 11 of which are in colors. Price, \$3.00 net. F. A. Davis Company, Philadelphia.

Among the "allied topics" are the author's socialistic ideas, oddly interspersed among the various theories of milk adaptation. These constitute the only original feature of the compendium. With the numerous exhaustive works now available, the necessity for a compilation of this character does not seem apparent. In justice, however, to the author, it must be acknowledged that he has presented in a style quite his own, profusely diversified with italics, the soundest views on infant feeding, particularly those favoring whole milk dilutions. In addition to a discussion of nutritional disorders, one finds here a rather elaborate consideration of pyloric obstruction, with an excellent chapter on its surgical treatment by the distinguished writer and operator, Dr. John B. Deaver. J. W. A.

American Illustrated Medical Dictionary (Dorland.) A new and complete dictionary of terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Veterinary Science, Nursing, Biology

and kindred branches; with new and elaborate tables. Eighth Revised Edition. Edited by W. A. Newman Dorland, M.D. Large octavo of 1135 pages, with 331 illustrations, 119 in colors. Containing over 1,500 more terms than the previous edition. Philadelphia and London: W. B. Saunders Company, 1915. Flexible Leather, \$4.50 net; thumb index, \$5.00 net.

This is a new and completely revised edition of this well-known and popular medical dictionary, attempting to furnish full and complete definitions of the terms of medicine and its allied sciences.

In addition to the volume being a concise and handy word-book for the practitioner's desk, there are found numerous anatomic and clinical tables and charts of specially prepared tests, stains, and methods of using.

The exact pronunciation of words is easily obtainable by a simple system of expressing sounds. The illustrations are clear and well selected for their practical value.

Although a dictionary, the book has a novel value for the average consulter in its large amount of encyclopedic matter. W. W. J.

Medical Clinics of Chicago: Volume I, No. 4. (Jan., 1916.) Octavo of 222 pages. Philadelphia and London: W. B. Saunders Company, 1916. Published bimonthly. Price, per year, \$8; cloth, \$12.

The two striking articles in this number are *Infantile La Grippe* by Dr. Abt, and *Pneumonia* by Dr. Mix. Mix says that the prognosis in pneumonia depends upon the blood pressure-pulse ratio, the strength of the second pulmonic tone, and the occurrence of myocarditis. Hence the treatment of pneumonia is to keep the heart beating.

Tice gives the treatment of *Epidemic Cerebrospinal Meningitis* in detail. George H. Weaver, a new writer, discusses very plainly the exact technique and value of the Shick Reaction in diphtheria.

A case of *Primary Carcinoma of the Liver* is given by Hamburger, and an attempt is made to give a distinct clinical picture to this rare condition. Preble's discussions are up to his usual standards, and a very interesting case of *Cerebrospinal Meningitis* due to the *Pneumococcus* is described by Goodkind. R. G. P.

Bandaging. By A. D. Whiting, M.D., Instructor in Surgery at the University of Pennsylvania. 12mo. of 151 pages, with 117 original illustrations. Philadelphia and London: W. B. Saunders Company, 1915. Cloth, \$1.25 net.

Whiting has divided his bandages into roller, tailed and handkerchief bandages, and though briefly, has emphasized all the fundamentals. He advocates muslin instead of gauze for general use, and has made his photographs tell a more detailed story by having blackened the edges of the bandages, so that each lap and turn is clearly outlined. This edition is an excellent text-book. R. G. P.

An Autobiography, by Edward Livingston Trudeau, M.D.; illustrated. Lea and Febiger, Philadelphia and New York. (See page 71, under title "Invalidism and Vitality".)

After repeated convictions and fines for violation of the law, the "Cedar Dairy Company" of Brooklyn recently went out of business in consequence of a final successful prosecution by the New York Department of Health, which resulted in a fine of \$1,500 against the company.

Trench Fever. Under this title McNee (British Medical Journal, February 12th, 1916), describes a relapsing fever which has occurred with the British forces in France. It has only affected two classes of men—those from the trench zone and men of the Royal Army Medical Corps. It is either contagious from man to man, or, what seems much more likely, is carried by one of the common flies or parasites found in the trenches. There are two clinical types of the disease: (a) a short fever of about a week's duration, followed frequently after a few days by a short single relapse; (b) a longer illness characterized above all by the number, sharpness and periodicity of the relapses. The most constant and characteristic symptoms are headache and pain in the legs and small of the back. The disease is transmissible in every case by the whole blood, whether injected intravenously or intramuscularly. It is not transmissible by the serum. Blood corpuscles were still infective after washing five times in saline solution to remove the plasma. It has not been possible to discover a causative micro-organism. The only constant morphological change in the blood is the presence of punctate basophilia.

The Grand Pump Room at Bath. For some months past the historic Grand Pump Room in the ancient city of Bath, England, has been closed for redecoration, but it was reopened on November 8th. The renovated room has been made to appear, even in minute details, as it must have appeared two hundred years ago. But such modern improvements have been added as draught-proof revolving doors, radiators in recesses under the windows, a ventilating fan, and large air ducts in the roof, and the old candle-brackets have been wired for electric light.

Whole Time Health Officers.—The Kentucky legislature has now before it a bill which if passed will provide a health officer for each county in Kentucky, with his office taken out of politics and out of competition with other doctors. A similar bill passed the Kentucky house of representatives two years ago by a large majority, and only failed to pass the senate, where twenty-nine out of thirty-seven members favored it, because of a deadlock in the closing days of the session.

Public Health in Stereopticon Views.—The United States Public Health Service has established a stereopticon loan library consisting of over two thousand views, the majority of which are original, dealing with various public health problems. These slides are loaned to physicians, health organizations, educators, welfare workers, and others without cost, and catalogues are furnished from which selections may be made.

During the reduction of the daily allowance of bread in Germany to 196 gm., a good deal of attention was given to the potato as a substitute article of diet. Raab (Münchener Medizinische Wochenschrift, 62nd year, p. 912) recommends the baking of potatoes peeled and cut into two or three slices until the outer surface is somewhat browned, as an excellent article of diet either warm or cold. Potatoes were extensively used in Germany during the general rise of prices following the Seven Years' War.

THE COLORADO STATE MEDICAL SOCIETY.

(Incorporated November 1, 1888.)

The Next Meeting Will Be Held in Glenwood Springs,—September 5, 6 and 7, 1916.

OFFICERS, 1915-1916.

President, John R. Espey, Trinidad.

Vice Presidents, 1st, C. E. Tennant, Denver; 2nd, J. U. Sickenberger, Grand Junction; 3rd, W. A. Kickland, Fort Collins; 4th, H. W. Averill, Evans.

Secretary, Crum Epler, Pope Block, Pueblo.

Treasurer, W. A. Sedwick, Metropolitan Building, Denver.

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Publication, A. J. Markley, Denver, Chairman (1916); L. B. Lockard, Denver (1917); Melville Black, Denver (1918).

Auditing, O. M. Gilbert, Boulder; H. A. Garwood, Denver; E. L. Rupert, Florence.

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Medical Education, Frost C. Buchtel (1916); Will H. Swan, Colorado Springs (1917); George H. Cattermole, Boulder (1918).

Health and Public Instruction, R. W. Corwin, Pueblo; W. T. Little, Canon City; H. A. Smith, Delta.

Committee to Cooperate with State Pharmacal Association, C. E. Edson, Denver; J. C. Chipman, Sterling; E. D. Burkhard, Delagua.

Committee of Arrangements for 1916 Meeting, W. W. Crook, W. W. Frank, and J. P. Riddile, Glenwood Springs.

Committee to Revise By-Laws, W. A. Jayne, Denver; L. H. McKinnie, Colorado Springs; H. A. Black, Pueblo.

Workmen's Compensation Acts, H. R. McGraw, Denver; S. D. Van Meter, Denver; D. P. Mayhew, Colorado Springs.

First Aid, Aubrey H. Williams, Denver; F. H. McNaught, Denver; C. B. Lyman, Denver.

Study and Control of Cancer, T. A. Stoddard, Pueblo; J. G. Hughes, Greeley; T. M. Burns, Denver.

Medical Defense, H. G. Wetherill, Denver; M. J. Keeney, Pueblo; Crum Epler, Pueblo.

Constituent Societies and Times of Meeting and Secretaries.

Bent County, first Tuesday of each month; P. A. Leedham, Las Animas.

Boulder County, every Thursday; C. L. La Rue, Boulder.

Crowley County, second Tuesday of each month; E. O. McCleary, Ordway.

Delta County, last Friday of each month; W. Scott Cleland, Delta.

Denver County, first and third Tuesday of each month; H. R. Stilwill, Denver.

El Paso County, second Wednesday of each month; G. B. Gilmore, Colorado City.

Fremont County, fourth Monday of January, March, May, July, September and November; R. C. Adkinson, Florence.

Garfield County, second Thursday of each month; W. W. Frank, Glenwood Springs.

Huerfano County, P. G. Mathews, Walsenburg. Lake County, first and third Thursday of each month; E. A. Whitmore, Leadville.

Larimer County, first Wednesday of each month; C. C. Taylor, Fort Collins.

Las Animas County, first Friday of each month; A. J. Chisholm, Trinidad.

Mesa County, first Tuesday of each month; R. B. Harrington, Grand Junction.

Montrose County, first Thursday of each month; S. H. Bell, Montrose.

Morgan County, E. E. Evans, Fort Morgan.

Northeast Colorado; N. Eugenia Barney, Sterling.

Otero County, second Tuesday of each month; R. S. Johnson, La Junta.

Prowers County, first Tuesday of each quarter; F. Milton Friend, Lamar.

Pueblo County, first and third Tuesday of each month; J. H. Woodbridge, Pueblo.

Routt County; H. C. Dodge, Steamboat Springs.

San Juan County; F. W. E. Henkle, Silverton. San Luis Valley; L. L. Herriman, Alamosa.

Teller County; Thos. A. McIntyre, Cripple Creek.

Tri-County; C. W. Merrill, Burlington.

Weld County, first Monday of each month; J. W. Lehan, Greeley.

Colorado State Medical Society

NEXT ANNUAL MEETING, GLENWOOD SPRINGS, SEPTEMBER 5, 6 AND 7, 1916.

THE PROGRAM COMMITTEE is now prepared to receive the names of those who wish to read papers at this meeting. Address the secretary of the State Society.

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The Chicago Policlinic and The Post-Graduate Medical School of Chicago

The Twenty-Fifth Annual Special Course Will Commence at

The Chicago Policlinic and The Post-Graduate Medical School of Chicago
Monday, April 3, 1916

Monday, May 1, 1916

and will continue three weeks at each institution. These courses which have given such satisfaction for so many years have for their purpose the presentation in a condensed form of the advances which have been made during the year previous in the following branches: Surgery, Orthopedics, Gynecology, Obstetrics, Genito-Urinary, Stomach and Rectal Diseases and in borderline medical subjects. Fee for each of the above courses, \$25.00. ☐ Special Operative Work on the Cadaver and Dogs, and General and Special Laboratory Courses. ☐ All regular clinics continue as usual. ☐ For further information address

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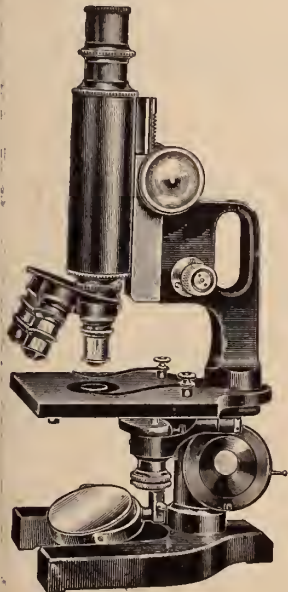
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THE 1916 PROGRAM.

THE SCIENTIFIC COMMITTEE OF THE COLORADO STATE MEDICAL SOCIETY HAS RECEIVED OFFERS OF PAPERS TO AN EXTENT ALMOST SUFFICIENT TO FILL THE PROGRAM OF THE NEXT ANNUAL MEETING, TO BE HELD AT GLENWOOD SPRINGS, SEPTEMBER 5TH, 6TH AND 7TH, 1916. THOSE MEMBERS WHO DESIRE TO READ PAPERS AND WHO HAVE NOT YET GIVEN NOTICE TO THAT EFFECT SHOULD AT ONCE SEND TO THE SECRETARY THEIR NAMES AND THE TITLES OF PAPERS TO BE READ. ALL APPLICANTS ARE REMINDED THAT ABSTRACTS OF PAPERS TO BE READ MUST BE RECEIVED BY THE SECRETARY NOT LATER THAN JUNE FIRST.

Editorial Comment

A SURVEY OF STATE BOARDS OF HEALTH.

As human societies become more and more complex, so the need for organized and centralized control increases. England and the United States, above all the world, have prided themselves upon the preservation of individual initiative as contrasted with governmental paternalism; and yet in both countries the need for closer co-ordination in many of the affairs of life is steadily widening the scope of what has been largely known on the continent of Europe, either by way of praise or blame, as state socialism. In this country the great limitation put upon federal as against state government has re-

stricted the possibility of uniform development in many directions. An interesting outcome of this situation in recent years has been the tendency toward responsible criticism of local affairs by voluntary national associations. The part played by the American Medical Association in medical education, and in the elevation of the standards of licensure in the various states, is a splendid example of what may be accomplished by such a combination of national opinion with local legislation and administration. Somewhat analogous are the conditions under which local volunteer organizations invite experts of national experience and reputation to conduct critical surveys of various matters of local administration; as for example has recently been done with regard to Denver city finances and to the work of the Denver school system.

The less attractive side of state as contrasted with federal control is well illustrated in the unequal development of public health organization in the different states. Thus while a few states compare favorably in this respect with the more enlightened European countries, in other states the matter of public health has been very grievously neglected. Realizing that the gathering of accurate information is the first step toward intelligent action, the Council on Health and Public Instruction of the American Medical Association, through Dr. Charles V. Chapin, commissioner of health of Providence, R. I., has for two years been engaged in making a survey of the state boards of health of the United States. The council was fortunate in securing for this work the assistance of one of the leading public health authorities of the country. The foreword to the volume of over two hundred pages now published

by the American Medical Association ("A Report on State Public Health Work") expresses the hope that the information furnished "will be of service to state boards of health and especially to executive secretaries of state boards of health in presenting to governors, legislators and legislative committees a clear statement of the facts regarding public health work in each state". The report is divided into three parts: 1, a summary of the conditions and needs of each state; 2, a review of the health activities of the states; 3, a score card rating.

Dr. Chapin visited each state health office. As was to be expected in a country of low average political morality, he reports a widespread and pernicious influence of politics in this matter of vital public concern. "Nowhere else," he says, "are the results so deadly as in questions of public health". "Very few men were appointed because they were public health experts."

Dr. Chapin's report has every appearance of being a fair and impartial statement of the results of careful investigation. In rating the various states he shrewdly observes that while, in marking students in school and college, marks are of little value as indicating differences between those of nearly the same standing, nevertheless it is generally true that marks will rarely if ever put a student in the first third who ought to be in the last third of a class. The first three states in rank in his rating are Massachusetts, New York and Pennsylvania, with respective totals of 745, 730 and 716 out of a maximum of 1,000 marks. At the other end of the list comes first New Mexico, with zero, and then Wyoming with ten and Arizona with 39. Out of forty-eight states it is unsatisfactory to find Colorado only tenth from the bottom of the list, with a rating of only 106 marks. Under notification of communicable diseases we are given a score of 23 out of 30; under diagnostic laboratory, for scope of work nothing, for amount of work 15 out of 70; under vital statistics 40 out of 40 for deaths, 10 out of 40 for births and nothing for tables; under food, 8 out of 20 for sanitary handling of food. Among the counts on which Colorado receives a zero mark are supervision of local

health officers, tuberculosis, distribution of sera and vaccines, child hygiene, education, general sanitation, and control of water and sewage.

In the individual state summaries, the features of Colorado's health department which are specifically criticized are the dictation of politics, the election of the executive officer from the board of health by the board, the lack of effective work in spite of an appropriation of about \$25,000, and some other matters referred to above as receiving zero marks in the rating table. Attention is called to the fact that the Colorado code of health rules has been declared a dead letter by the law department of the state, Colorado being one of the only three states in which the health department exercises no legislative function.

AN ELUSIVE ORGANISM.

Among the acute infections whose origin has thus far completely baffled scientific inquiry, none challenges keener interest in the profession, especially throughout the western states, than Rocky Mountain spotted fever. Confined to a very limited endemic area, but appearing sporadically at many points in Montana, Idaho, Wyoming, Utah and Colorado, this disease has borne, for ten years past, probably the most intensive study in the entire range of activities of our Public Health Service.

The long series of investigations since spotted fever was first classified as a distinct entity by Wilson and Chowning have developed the following facts concerning the virus: Man, monkeys and at least six varieties of rodents peculiar to the locality are susceptible, while the larger domestic animals are practically immune to infection. In the laboratory, guinea pigs and white rats are found very susceptible, but white mice seem immune. The bite of the Dermacentor, or woodtick, alone transfers the virus to man and to the above named animals. The transmission is shown to be other than mechanical from the fact that, once infected, a tick continues so through life, and from the additional observation that the female tick transmits the virus to her young. The

strain may be propagated indefinitely in guinea pigs through frequent inoculations but it dies within a few days outside the animal body. It does not pass through the Berkefeld filter under moderate pressure, and all attempts to cultivate it aerobically have failed.

At various times during the past twelve years, investigators (among them Ricketts, who later established the mode of infection in typhus fever) have reported diplococoid bodies in fresh blood smears from human cases. Wilson and Chowning described a piroplasm, but none of these findings have been confirmed by subsequent workers.

In endeavoring to grow the virus anaerobically, officers of the Federal Service have succeeded in isolating at least ten strains of diphtheroid bacilli which, strangely enough, strongly resemble the *Bacillus typhi exanthematici* of Plotz. On account of the close resemblance clinically between typhus and spotted fever, these organisms have been studied most carefully, but thus far all have been shown to be non-pathogenic for guinea pigs. They are not agglutinated by immune guinea pig serum and do not show complement fixation with immune serum when used as antigen.

In a preliminary report of laboratory investigations made both at the field station near Vietor, Montana, and at the Hygienic Laboratory in Washington, Surgeon L. D. Fricks describes an organism which may possibly clear up permanently the etiology of this peculiar infection. Fricks has noted in blood smears, stained by the Giemsa method, both intra- and extra-corpuseular bodies, granular in character, appearing singly and in pairs and staining a brilliant red. By dilution and centrifugation, a method for concentrating and differentiating these bodies has been found. The serum smears show many bright red granular bodies, highly refractile, accompanied by larger light blue masses, all of these surrounded by a pale blue matrix. None of these bodies has been encountered in controls. "The red blood cells appear to take the stain normally, but in many of them are found round or slightly elongated red chromatin bodies partially surrounded by, or in

close approximation to, a somewhat larger body staining a deep blue". (Fricks.) From the fact that these invaders have never been found except in spotted fever blood, and in view of their strong resemblance, morphologically and tinctorially, to known protozoa, it is believed that further observation of their natural history may result in definite identification as the cause of this exanthem. Certainly those who are familiar with the splendid epidemiological work of Dr. Fricks in the Bitter Root Valley will continue to hope that his efforts in this direction will be eminently successful and the cause of preventive medicine graced with another triumph.

J. W. A.

Feeble-Mindedness.

At the present time the significance to society of the mentally defective is appreciated as never before. Heretofore we have classified these unfortunates as idiots, imbeciles and high grade imbeciles or feeble-minded. The idiot and imbecile have always been regarded as a burden on the body politic, but it is only recently that we have realized that the feeble-minded individual is a real menace to society.

These people often appear to the untrained observer as merely backward, dull or peculiar. The definition adopted by the Royal College of Physicians of such a defective is "One who is capable of earning his living under favorable circumstances, but is incapable, from mental defect existing from birth or from an early age, of competing on equal terms with his normal fellows or managing himself and his affairs with ordinary prudence". Tests have been devised by which the dull but normal individual may be distinguished from the really defective. In this country the Goddard modification of the Binet tests is used. If by these tests a man of twenty-one shows the mentality of a boy of twelve, there is something radically wrong with him.

The Training School for the Feeble Minded at Vineland, New Jersey, has been a pioneer in such work in this country. In 1906 a Department of Research was formed and a systematic effort inaugurated to de-

termine the cause of feeble-mindedness. The method pursued under the direction of Dr. Henry H. Goddard was after studying the individual defective in the school to go out and study his previous environment, relatives and forbears. It has been found that the feeble-minded are at least twice as prolific in offspring as normal people, that the feeble-minded descendants of one feeble-minded ancestor are often very numerous, that where there is one feeble-minded member of a family there are likely to be many others and that fully one-half of the paupers, prostitutes and criminals belong to this class.

Probably the most interesting and valuable contribution to this subject to date is Dr. Goddard's description of the "Kallikak Family" in the book of that name.

Deborah Kallikak was a defective girl in the Vineland institution. By two years of research her family connections were traced through six generations from a Martin Kallikak. This man belonged to a good New Jersey family of revolutionary times and was himself a soldier in the Revolutionary War. He became acquainted with a feeble-minded girl and by her was the father of an illegitimate son, who was named Martin Kallikak, Jr. After the war Martin, Sr., came home, married and had seven legitimate, normal children. Martin, Jr., who was feeble-minded, married and had nine children. Of these two were normal, five were feeble-minded, the mentality of one could not be determined, and one died in infancy. From these beginnings we have two families originating and living in the same neighborhood and environment, but the one family descended from a normal man and a normal woman and the other from the same man and a feeble-minded woman. Dr. Goddard says, "We thus have a natural experiment of remarkable value to the sociologist and the student of heredity".

From Martin Kallikak, Jr., the illegitimate feeble-minded son of Martin, Sr., there are four hundred and eighty descendants. There is conclusive proof that one hundred and forty-three of these were feeble-minded, and that forty-six were normal, while as to the rest the facts are unknown or doubtful.

Thirty-six were illegitimate, and thirty-three were immoral persons, mostly prostitutes. Twenty-four were confirmed alcoholics. There were three epileptics. Eighty-two died in infancy. Three were criminals. Eight kept houses of ill fame.

The descendants of Martin Kallikak, Sr., by his wife number four hundred and ninety-six. They were good representative citizens, doctors, lawyers, judges, educators, men and women prominent in every phase of social life.

There have been no feeble-minded among them; no illegitimate children; no immoral women. There has been no epilepsy, no criminals, no keepers of houses of prostitution. Only fifteen children have died in infancy. There has been one insane, a case of religious mania, perhaps inherited but not from the Kallikak side.

It is apparent from this that if the feeble-minded girl who was the progenitor of the feeble-minded branch had been properly taken care of, if she had been in an institution like the Vineland Training School or even if she had been sterilized, a great deal of vice, crime, suffering and unnecessary expense to society would have been prevented. We have Kallikak families with us today and it is estimated that two per cent of the school children in this country are feeble-minded. To properly deal with this problem is going to cost something to the communities who take it up. But the present way of dealing with it, or rather not dealing with it at all, is the most foolish, inefficient and expensive possible. The important facts are that though the condition is incurable, still by segregation and proper care the defectives may be made comparatively happy, at least partially self-supporting, and prevented from increasing their kind, and that thus society can be relieved of a large proportion of its burden of pauperism, vice and crime.

A national movement has been started to take up this work. Colorado has gotten interested and it is to be hoped that before long a school survey will be made in Denver to determine how many defectives we have to deal with.

C. L. P.

WOUNDS IN THE EUROPEAN WAR.

The present war in Europe has broken many military precedents. Fighting men of life-long experience have had to adapt themselves to circumstances such as they have never before encountered. Of the three great combatants engaged on the "western front," England has had the most recent experience of warfare on a large scale. But the methods of fighting recently employed in Belgium and northern France differ widely from those of the Boer war.

The surgery of this war has necessarily been as rich in surprises as the military situation. Surgeon General Bowlby, in his "Bradshaw Lecture on Wounds in War" (British Journal of Surgery, vol. 3, p. 451), begins by pointing out how radically different are the fields of war in South Africa and in France. His own experience of military surgery has been limited to these two wars. The imminent possibility that the United States may become involved in war with the whole of Mexico lends some additional interest to the comparison made by Bowlby, inasmuch as the conditions of fighting in the southern republics would probably in many ways resemble those of the South African veldt.

In the Boer war the fighting was in a very thinly-inhabited country, which was for the most part uncultivated. There was very little rain, the soil was very dry, and the ground was uncontaminated by manure. Bacteriological examination proved that all forms of pathogenic bacteria were absent from the soil of the veldt except near human habitations.

On the battlefields of Western Europe conditions are reversed. For many centuries the country has been thickly populated with human beings, and has supported large numbers of domestic animals. The rainfall is profuse. The result is that micro-organisms are abundant, even in soil lying a good way beneath the surface.

Further important differences exist as to the nature of the wounds inflicted in the present war. Thus while shell wounds were extremely rare in the African campaign, in this war they are almost or quite as numer-

ous as those caused by bullets. Bowlby cites two interesting cases seen by him in South Africa as strikingly illustrating the different combination of circumstances which has now to be dealt with. Two troopers, in each of whom the femur was fractured and comminuted in its upper third by a bullet, had been left for three days with no other treatment than the application of a small first field dressing and the bandaging of the limb to a rifle with puttees thick with dust. Yet the wounds never gave the slightest trouble, although similar injuries with like treatment in the present war would, says Bowlby, almost certainly have resulted in death of the patients from gangrene, or at least in prolonged suppuration and probable loss of the limb.

In trench warfare, wounded men are usually thickly covered with either mud or dust. "When a man in one of the advanced trenches is hit and falls, he lies in mud or dust, or else in muddy water a foot or more in depth". The first dressing is likely to be done under the care of the regimental medical officer in a larger and deeper excavation commonly known as a dug-out. Then the patient passes to the first aid post, half a mile or more distant, access to which is usually obtained along a communication trench six or eight feet deep and more or less muddy and wet.

Badly wounded men are often left lying between the opposing trenches until after nightfall, when they crawl in even with badly smashed limbs, or in other cases are brought in by stretcher bearers. Extraordinary tales of endurance are sometimes related: as in the case of a man who in January, 1915, lay for ten days with only a little pond water to drink, and escaped with his life although both feet were lost by gangrene.

According to Bowlby, the bullets used by the British, Germans and French, all have points like that of a sharpened lead pencil, so that the balance of the bullet is changed and the missile is very easily turned completely over on its short axis, to enter the body sideways or base first. In many cases these bullets "tear the soft tissues to rags, and blow out the muscles and fascia through great rents in the skin". When a large bone

is hit, "the part looks as if it must have been struck by a large fragment of shell". The larger fragments of shell produce severe crushing and lacerating injuries, with extensive death of the tissues, the condition being often such as Bowlby has never seen in even the worst machinery accidents in civil life. The wounds by bombs and grenades are mostly small, but are especially liable to be infected, since the bomb usually falls to the ground before bursting. A very powerful destructive effect is produced by the mere explosive force of the gases of a large shell. The expansion of these gases alone is sufficient to kill, and a case in which an autopsy was made showed very numerous petechial hemorrhages in the brain.

Bowlby refers in the following words to an interesting phenomenon: "I think that what would strike most forcibly any observant person who was brought into a room filled by large numbers of recently wounded men from an important fight would be the fact that nearly all of them were asleep, in spite of wounds which one might well suppose would effectually banish sleep. . . . Those who only see wounded men in the base hospitals have little idea of the silence of a crowded room in a clearing station when heavy fighting has been in progress for a day or more." Many of those who are asleep are also suffering from profound collapse, and "there are hundreds of men whose best chance of life is to be kept warm and left absolutely quiet, and persuaded to take hot soup or cocoa or perhaps alcohol before again going to sleep". "They are indeed often so nearly dead that it may be several hours before any attempt can be made to dress their wounds."

OFFICERS OF MEDICAL SOCIETIES.

The average medical man is notoriously a poor business manager, and there is perhaps no department of his activities in which he shows this more strikingly than in the election of officers of his local medical society. The prosperity, and even sometimes the very existence of a small organization commonly depends in the main upon the energy and ca-

pacity of its executive officials. Many a meeting is marred by the fact that a president or secretary or both failed to make any plans for its program until the eleventh hour. In our own State, one of the not unimportant duties of local secretaries is to furnish reports of the meetings of the societies to the official journal of the State Society, Colorado Medicine. In some cases, in accordance with a resolution of the last House of Delegates, this duty has been turned over to a separate officer having the title of "Reporter". Unfortunately, it has proven that the individual designated by the latter title is subject to the same human failings as he who acts under the old name of "Secretary". From some of our local societies, both large and small, careful and concise reports of meetings are sent with delightful regularity to the editor. In other cases, so far as this form of expression is concerned, one might suppose that the society had gone out of existence. One organization a year ago regularly sent in reports which were not excelled anywhere in the State, but it has since elected new officers, and is now practically voiceless so far as our columns are concerned.

Original Articles

THE INTERPRETATION OF THE SYMPTOMS AND THE SURGICAL MANAGEMENT OF ACUTE SUPPURATIVE OTITIS MEDIA.*

JAMES J. PATTEE, M. D., PUEBLO.

As a foundation for the correct understanding of the etiology, symptoms, complications and operative requirements of acute suppurative otitis media, it may not be amiss to refer casually to the anatomy of the temporal bone.

The temporal bone consists of three principal parts, namely, the tympanic cavity, the antrum and the mastoid process.

Chapman describes the tympanic cavity as follows: "The middle ear cavity lies at the internal end of the external auditory canal,

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

from which it is separated by the drum membrane. The cavity is flattened transversely. In size it is 5/12-inch from before backward, 1/4-inch perpendicularly, and 1/4-inch transversely, and its walls are composed of unyielding bony structures, with the exception of the outer wall, which is composed of the drum membrane as before mentioned. The cavity is lined with mucous membrane and contains the hammer, anvil and stirrup, a chain of ossicles lying between the drum membrane and the oval opening in the bony wall of the internal ear, being placed in the order in which they are mentioned from without inwards. The mucous membrane of the middle ear cavity is continuous with the mucous membrane of the nose and throat through the medium of the tympano-pharyngeal tube, which extends from the middle ear cavity to the naso-pharynx." The roof of the tympanum is formed by a delicate, fragile plate of bone 1 millimeter in thickness known as the tegmen, which in suppurative otitis is frequently penetrated, producing abscess in the middle cranial fossa.

The antrum is a passageway from the tympanic cavity to the mastoid, affording communication between them, much as the nasofrontal duct connects the interior of the nose with the frontal sinus. That this passageway, the antrum, directly connects the tympanic cavity with the mastoid cells is proven surgically as well as anatomically because cases of acute mastoiditis heal promptly if we open up to and barely into the antrum without carrying the operation on through the antrum into the middle ear; in fact the conservation of function requires that the operator go only to the antrum, leaving all tympanic structures intact. Altogether too frequently have operators appeared to doubt the adequacy of the antrum as a drainage canal, and in their worse than needless effort to provide additional drainage they have ruined the integrity of the middle ear with consequent sacrifice of function.

The mastoid process in the adult contains pneumatic spaces known as cells, which communicate with the antrum. The cells near the antrum are usually small, whereas in the mastoid tip and close to the surface they are generally large. The same type of

mucous membrane that lines the tympanic cavity extends over the interior of the antrum and mastoid. From a clinical standpoint the statement of Pierce, embodying the idea of many others, "that the middle ear begins at the pharyngeal end of the Eustachian tube and ends only in the most remote pneumatic cell of the temporal bone", might be accepted.

Microorganisms enter the middle ear directly through the Eustachian tube from an inflamed throat, post-nasal space or tube; by post-nasal douching; by sneezing; by vascular conveyance of germs; and as a feature of systemic diseases like measles and scarlet fever.

About twenty per cent of school children have adenoids. Quite a high percentage have enlarged tonsils. In every case of earache and especially in all cases of recurrent otitis media, either simple or complicated, the surgeon should investigate these glands at the very beginning and remove them if abnormal. When we bear in mind that so simple a procedure as the adenoid operation will put an end to earache, prevent recurrent otitis media, shorten the duration of healing in many of our mastoid operations, and conserve hearing, we marvel at the neglect along this line of quite a number of practitioners and some specialists. Even the laity is well informed on this subject and yet it is treated indifferently by quite a percentage of our own profession.

Too much stress must not be placed upon the appearance of the membrane. Neither should one ponder unduly about its bulging. All of us have seen spontaneous perforation occur earlier than appearances would indicate. If there is earache, some deafness and some alteration in the appearance of the ear drum, the sooner the membrane is freely incised the better. Pressure and pus are the basic factors upon which all the pathological changes in the mucous membrane, ossicles, and cell walls depend. The longer they exist the greater the pathological changes and tissue destruction. It is bad practice to permit pressure and the necrotic changes to produce a spontaneous perforation. The advantages of the incision are that the pressure is released and the cavity drained. The

opening should be made with a keen, thin knife. Such an opening is preferable to the spontaneous rupture because it can be placed where it will facilitate drainage and minimize scar formation, advantages vitally important to function.

An early paracentesis relieves pain, increases drainage, reduces pressure, hastens recovery, conserves functions and lessens complications. On account of its great advantages it should be performed in many cases even though the drum membrane has previously ruptured spontaneously.

A culture is very beneficial in aiding us in determining the treatment and offering a prognosis. In acute suppuration the pneumococcus is found more frequently than any other organism, the streptococci occupying second place and the staphylococcus third.

The prevailing symptoms of acute suppurative otitis media are pain, discharge, tenderness over the antrum and mastoid tip, bulging of the membrane, sagging of the soft tissue lining the canal and the general symptoms of infection.

Pain and tenderness are symptoms of great value and are worthy of continued study. To be sure, tenderness varies greatly but it is very significant. Persistent local mastoid tenderness is one of the most dependable indications for a mastoid operation. If free discharge accompanies the pain, it is the more trustworthy. The recurrence of tenderness after it has disappeared is noteworthy; it signifies mastoiditis.

The importance of tenderness increases with its duration. For instance, tenderness should be rated at its full value on the tenth or fourteenth day of mastoiditis, while a slight allowance might be made on the third or fourth day. An increase of pain coincidental with a reduction or cessation of discharge points to pressure and destructive tissue changes.

If the cortex is thick and firm it may require deep pressure to elicit tenderness. I wish to strongly emphasize the value of pain as an indication for opening the mastoid. There may be no swelling, no redness, no fever and yet pain accompanied by discharge indicates operation. I do not say that every case with pain over the mastoid

will not get well; it is true that quite a percentage will, but I do say that temporizing is dangerous.

Discharge, like pain, is a variable symptom. Although variable, it is valuable, because to the skilled otologist every variation is a valuable lesson which he can interpret to the patient's advantage. If the flow is slight, it probably comes from the tympanum, whereas a copious flow points to larger areas and more extensive destruction in the antrum and mastoid cells.

If the flow lessens, this is generally a favorable sign except in those cases where all other symptoms are simultaneously aggravated. A noticeable increase in a previously uniform discharge indicates increased activity of the infection.

The laity and physicians recognize mastoiditis when there is redness and swelling back of the ear accompanied by pain and discharge. They are greatly alarmed about these cases and regard them as very serious, in which opinion they are nearly always mistaken, for these cases have passed the danger point by an escape of pus externally through the cortex. Of course these cases should be operated upon but they rarely produce brain abscess, meningitis or other complications. On the other hand, cases that do produce intra-cranial complications do not produce any of these obvious symptoms.

Sinking of the soft parts in the canal should be considered in conjunction with the whole symptom-complex, for alone, and especially to the inexperienced, it is rather unreliable. Here I wish to state that of course each symptom should be considered with relation to all the symptoms.

The hearing should be tested. The greater the degree of deafness, the more severe the middle ear inflammation, as a rule. The test is a valuable aid in arriving at a full understanding of the case.

Much has been said and written about the symptoms of mastoiditis and the time to operate. There are many who advocate a prompt radical course while others advocate a course of "watchful waiting" and conservatism.

Only the physician in charge who ob-

serves the case from day to day can determine which cases require operation and determine the time. For my part, I am inclined to operate on all cases which do not respond satisfactorily to a short period of abortive treatment. Early operation will yield very nearly if not fully one hundred per cent of recoveries. Delay is certainly fraught with danger in a number of the cases, and the percentage of recoveries is bound to be much lower. Early operation has the additional advantages of conserving a maximum of function and shortening recovery. Granting that an otologist operates early on all cases of mastoiditis as a routine, I believe that he need not operate as extensively or radically as is customarily done by the average specialist today. I have seen no small number of operators remove every bit of cell wall and membrane as carefully as if they were dealing with extensive caries in radical mastoid work, or with malignancy. I believe that many operators have been going too far in these acute cases. During early stages of the inflammation there is no definite line of demarcation, and damage has been done by going into areas not already infected.

In discussing this question with a general surgeon he said: "I do not believe there is any more reason for doing a radical operation in an acute case than undertaking to do a radical operation for an acute osteomyelitis in other bones, drainage being the primary object." In my opinion it is better surgery to operate early and conservatively, than late and radically.

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DISCUSSION.

Frank R. Spencer, Boulder: I agree with Dr. Pattee absolutely concerning the integrity of the middle ear, as this should not be molested during a simple mastoid operation. On the other hand, I believe that we should remove as much of the mastoid cortex as in the judgment of the operator seems necessary at the time of the operation. In cases of pneumococcus infection we often find very little necrosis of bone, and consequently we do not need to remove so much of the mastoid. However, in cases of streptococcus infection, even though the case has been under observation from the first and the diagnosis made early, we find at the time of the operation very extensive necrosis of the mastoid, and the operative procedure must be more radical than in the former instance. This was true in one of my own cases. It seemed to me four years ago, while in Vienna, that the Aus-

trian otologists were removing too little of the mastoid during the simple operation, and that they left the wound too ragged and uneven for the best healing. I believe we have changed our minds, somewhat, concerning this phase of the subject here in America, but in Vienna the operators seem to go to the extreme, as they left the mastoid wound in a condition which to an American seemed unfinished.

Tenderness over the tip of the mastoid during the course of the average middle ear abscess is purely of an inflammatory origin and does not signify purulent mastoiditis. If there is tenderness over the mastoid antrum as well, and especially tenderness upon deep pressure and bulging of the posterior superior meatal wall, then of course we must recognize a purulent mastoiditis.

The early free incision in the drum which Dr. Pattee has spoken of means less mastoid surgery. Personally, my own mastoid surgery is getting less and less, as I hope it will continue to do. The laity now appreciates the necessity for the early incision in the drum. The majority of the patients for whom I do a mastoid are those who did not see a physician until some time after the drum had ruptured spontaneously.

I should like to mention also the cases which do not show, at every time, evidence of mastoiditis, but which do show some deafness, muco-purulent discharge, and a large perforation in the drum, as a result of not having had an early free incision to evacuate the pus, or, better still, an incision before pus has had time to form.

Personally, I believe I get better results after the incision has been made by using a 10 per cent solution of phenol and glycerin in the affected ear several times daily. This can easily be instilled by the patient's friends at home.

C. E. Cooper, Denver: I should like to emphasize the point brought out by Dr. Pattee, that if there is any abortive measure directed against the development of mastoiditis it is early incision, and if there is any measure that really insures a return to normal function it is early incision of the drum membrane. It is to be regretted that Dr. Pattee, while he mentioned type of infection, did not go into details, but it is one of the accessory points of diagnosis and has something to do with the prognosis. If we find a simple staphylococcus infection, we can assure a patient that early recovery will ensue, with a return to normal hearing. If, on the other hand, we find streptococcus or streptococcus mucosus capsulatus infection, we cannot offer the patient so much assurance. If there is any microorganism that produces protean changes in the ear it is the pneumococcus. If we find a streptococcus infection, we shall find all the symptoms aggravated; pain will be severe, fever will be high, the local changes will be pronounced and very marked. There is, however, one streptococcus that we find, the streptococcus mucosus capsulatus, which is associated with the condition and accompanied by very mild clinical symptoms. One hesitates very much about interfering with the mastoid, and yet that microorganism is the most destructive of bone we have. Bone melts under it. To illustrate, I will mention a case which I had occasion to operate upon within the past two months. In this case the trouble was of one month's standing. It took great persuasion to convince the patient of the necessity of opening the mastoid, his symptoms were so mild. It was the presence of the streptococcus mucosus capsulatus that urged me to advise operation. Upon opening the mastoid, When the middle fossa and posterior fossa were exposed, it was found that the whole interior

mastoid cavity was broken down into one large abscess. In connection with this case I want to mention another point, that where we find the streptococcus mucosus capsulatus, it does not attack soft tissues; the soft tissues are quite resistant to it, and consequently the membrana tympani, although repeatedly incised, will repeatedly close. I think we can gain a great deal from our knowledge of the etiological factor in mastoiditis both as to prognosis and as to the method of treatment.

Thomas J. Gallaher, Denver: In acute suppurative otitis media it is essential to establish and maintain drainage. In regard to the mastoid itself all diseased bone should be removed, but we no longer make the inner wall as smooth as the inside of a tea cup, as the life of the bone is thereby endangered. Particular attention should be given the zygomatic cells, the failure to remove which is the cause of many secondary operations. With early and proper procedure, very few cases of acute suppurative otitis media should become chronic.

The ideal result is that in which the suppuration has been cured and the function restored. The mastoid operation should not be delayed when indicated, and the condition of the labyrinth should be ascertained. This is difficult to establish in young children, but can easily be done in adults.

While it is rare that labyrinthitis follows acute mastoiditis, yet if an acute condition is engrafted upon a chronic one this can occur. If a non-functioning labyrinth is established the mastoid operation plus labyrinthine drainage should be done.

The blood examination is not so satisfactory in determining the absorption of pus as in other parts of the body, owing to its being confined within bony walls. The proper treatment of the Eustachian tube will shorten the duration of acute suppuration.

It is useless to attempt to close perforations in the membrana tympani until the functions of the Eustachian tube have been reestablished.

George A. Boyd, Colorado Springs: I should like to refer to one phase of the subject not yet touched upon. From the paper and discussion we now fairly understand the cause of the diseases under discussion, and we have learned the difficulties of handling these cases as individual doctors. Is it not strange that no one has suggested a means of prophylaxis except in tuberculosis? We as a body carry no authority from the state or city to do anything toward the prevention of any streptococcic, pneumococcic or colon bacillus infection. Have we not a duty to perform in reference to isolating these cases, and preventing as far as possible many of them from developing? In my own experience time and again I see tonsil infections go through a family when I am absolutely unable to prevent it, not because it could not be done, but because I have no authority except my own to say to these people that this is an infectious disease and must be isolated. Unless I can bring some authority beyond myself, I am unable to accomplish the larger service of prevention.

As I listened to the paper and to the discussion, I hoped some one would mention the fact that we as a body should take some action in regard to instructing the public in this matter, and bringing before the various municipal bodies and state legislature the fact that we have now arrived at a point where we have sufficient knowledge, if we can get the authority and cooperation of our

state, to begin the work of stamping out these infections.

F. E. Wallace, Pueblo: Dr. Pattee has mentioned the importance of early operation. I wish to emphasize that point. I have seen three cases of mastoid operation without perforation of the drum, and yet when these cases came to operation I found necrosis of the inner wall and the brain exposed. One patient, who complained a great deal with symptoms of earache, failed to go to the family physician for ten days after she had had symptoms. He realized her condition and immediately referred the case. The child was operated on that afternoon. I found necrosis with the brain exposed.

I want to emphasize the particular point of early operation because we never know what serious involvement may be present.

Don A. Vanderhoof, Colorado Springs: I think it can well be said, when in doubt operate. I should like to say a word in regard to infections with the staphylococcus aureus and albus. One of the doctors spoke of it not being a virulent infection. Nevertheless, it has been my experience that it is one of the most miserable, one of the meanest infections that we have in certain ways. The patient often runs along for days without elevation of temperature, with no tenderness at all, even on deep pressure. The question here of what to do and when is an important one.

I recall two cases that came under my observation a few weeks ago. One went on for about ten days and the other for about six weeks, with virtually no symptoms except vague pains in the region of the occiput after the acute symptoms were over. When the mastoid was opened a great amount of necrosis was found. The middle fossa was exposed. In that case it was a question for several days whether or not to operate, and I think the question should have been decided on the principle, when in doubt operate.

The question which Dr. Gallaher brings up in regard to hearing is a very important one. There is no question in my mind that when we operate early we have good reasons for doing so, and one of those reasons is that we get first-class results so far as hearing is concerned. There may be a diminution in the hearing for certain reasons, but if an operation is done early on a child or an adult, I think it can honestly be said that 95 per cent of the cases will have perfect hearing, or nearly so.

M. R. Bren, Denver: I was glad to hear Dr. Pattee mention the importance of adenoids as a causative factor in cases of acute otitis media. Of course, we all appreciate the fact that adenoids are a common cause in these cases, particularly the recurrent type of otitis media. They are frequently overlooked because, although present, they may produce none of the classical symptoms, such as mouth breathing, snoring, disturbed sleep, etc. I think they should be looked for carefully in every case, and one should not depend upon symptoms, nor even the examining finger, but should examine with the mirror whenever possible. I had a case some years ago that demonstrated this very clearly. The patient, a child, had an attack of acute otitis media in the left ear. A history was given of similar attacks each winter on the same side. When I suggested to the parents the possibility of the existence of adenoids they denied their presence on the strength of statements to that effect made by one or two other specialists. I insisted upon an examination, and with the rhinoscopic mirror found a perfect picture; the left lobe of the adenoid

mass pressing upon the Eustachian tube, the right side showing a clear space between the small amount of adenoid and tube. I was able to remove this in one piece and could then readily demonstrate the difference between the two sides. The removal of the adenoids was followed by a perfect cure in this case, with no subsequent return of the otitis media. So I want to insist upon the necessity of a careful examination in these cases, if possible, by the mirror or some method which enables one to see where the adenoid mass is located.

L. E. Rupert, Florence: What about free irrigation in these cases?

James J. Pattee, Pueblo (closing): I fully agree with Dr. Spencer with reference to making a classification of the etiological organisms or the causative factors entering into these conditions from a bacteriological standpoint.

One of the advantages of the paper is the statement of a certain law, and that is emphasized by the discussion which has been brought out. I mentioned the question of pressure and the damage caused by pus, and in various ways they have been both emphasized clearly by Dr. Gallaher, and I agree with him entirely. Pressure and pus are the underlying factors in the whole pathological chain.

As to Dr. Rupert's question with reference to free irrigation, I am not in favor of irrigating too freely. Of course we can keep the canal clean, and keep the membrane open by free incision, as suggested by Dr. Gallaher. We should not only have irrigation, but I think the drum membrane and incision should be looked at to see if they are cleaned out properly.

PERIPHERAL FACIAL PARALYSIS.*

With Special Reference to Diagnosis and Treatment of the Refrigeration Type.

GEORGE A. MOLEEN, M.D., DENVER.

It has frequently been observed that clinical types of disease seem at times to present themselves in groups. Often the tendency to apparent grouping is real, and again not infrequently one may be so impressed that the number is likely to be overestimated, especially when several cases of a similar nature are encountered within a brief period of time.

It is partly because of such an impression and, more especially, because it seemed that something of practical interest might be brought out regarding the diagnosis and treatment of facial paralysis, that this paper was undertaken.

In reviewing the personal records of nervous diseases in 1200 cases, it was somewhat surprising to find but 26 in which there was paralysis of the face as the chief disturb-

ance. Of these five were due to, or secondary to, middle ear or mastoid disease; two were due to cyst and tumor of the brain; one was due to focal brain syphilis; two were due to trauma (fracture of the base, through the petrous portion of the temporal bone); one was due to syphilitic hyperplasia, in the aqueduct of Fallopius; and fifteen were of the acute toxie, a *frigore* or rheumatic type. It is especially with the last class that it is the purpose of this communication to deal.

Of this series, six were in male and nine in female patients. The ages varied from five to seventy-four years; the greatest number, six, occurred in the third decennium. Nine were of the left side and six were on the right.

Gowers' believed the disease to be more common in males because of the greater subjection to exposure, having found sixty-six males and forty-six females in his series. Waterman² in tabulating 968 cases, including 335 of his own, found that 52 per cent were male and 48 per cent female. In studying other groups of cases reported it seems that the sexes are about equally affected. Likewise the side of the face which was most frequently involved was of no more than a passing interest and would average about equally.

The onset is almost invariably abrupt; often on awakening one side of the face is noticed to be inactive, seldom accompanied by pain and with no loss of sensation; indeed, not infrequently the patient is unaware of the paralysis until attention is called to it. Sometimes the irritation of the eye, caused by the inability to close the lid, leads to its discovery. Sometimes there has been experienced a subjective sense of taste, and here it is interesting to note that this seems most apt to be the case in those occurring on the right side. Of the six cases of right-sided paralysis in this series, four had voluntarily spoken of peculiar sensations of taste; one noticed a loss of taste and one was a boy of five years; while in none of the left-sided cases was this matter mentioned.

The paralysis is usually complete in all the muscles of expression of the face, including the muscles of the brow and the

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orbicularis palpebrarum, as well as the small muscles of the wing of the nose, the lips and the platysma. In individuals who have the use of the muscles of the ears these will also be affected. On attempting to close the eye the eyeball is rotated upward and the patient is not aware that the eye is not closed. The reflex act of winking is abolished. In looking upward the eyeball on the affected side rotates upward more than the one on the normal side—the so-called Negro sign. The patient has neither emotional nor voluntary movement of the affected side. The tongue is not affected, but, owing to the deviation of the mouth, may deceptively appear to be protruded to one side. The palate has been reported to have been involved, but inasmuch as it receives its supply from another source, this must be regarded as questionable. The muscles of mastication are not impaired.

The paralysis is of the peripheral or flaccid type, with loss of reflex action, and if the case does not go on to recovery muscular atrophy and contracture take place. The electrical reactions are those of degeneration, more or less complete. In the more severe cases there is no response to the faradic current and the galvanic irritability is increased with the characteristic changes in the polar formula.

There is no loss of sensation in any part of the face and the tongue will be found to perceive touch and pain, which, in investigation, should be carefully distinguished from the sense of taste.

The loss of the taste sense occurs in those cases in which the nerve is affected in the petrous bone (and these constitute the great majority) within the Fallopian canal peripheral to the geniculate ganglion and before the separation of the chorda tympani from the facial trunk just above its emergence from the stylo-mastoid foramen. It is lost on the anterior two-thirds of the tongue on the same side. Quite often, however, careful testing shows a distinct loss on both sides and this is more frequent when the paralysis is on the right side; in left-sided paralysis it is more common to find distinct limitation of the loss to the one side.

This peculiarity, as well as the previously

mentioned observation that all of the cases in which the paralysis occurred on the right side in my series, unsolicitedly mentioned having experienced a peculiar sense of taste prior to the attack or as the paralysis came on, was quite interesting. I am unable to find mention of it in the literature at my disposal as associated with right-sided affections. I believe it to be explained by the facts that taste impressions, like those of smell, are registered bilaterally; that both are more intimately associated with the higher perceptive faculties in the left side of the brain in most individuals; and that the right centrifugal tract being in more direct relation with the active centers of perception, an irritation of these centers reaches the consciousness as taste impressions. Likewise we may suspect the same reasoning to apply to the diminution of taste sense bilaterally in right-sided degenerations, rather than those of the left, where I have found them to be more often limited. It is known, for example, that in animals destruction of the olfactory center on one side may diminish, but not destroy the sense, while if both sides are destroyed a loss will follow. The higher cultivation of the left hemisphere in right-handed persons and the influence of the special senses in view of these circumstances offers a field for interesting as well as highly useful work for future observation.

An increase in the sensitiveness to sound (hyperacousis) is quite often to be observed on the same side, and is to be explained by the tensor tympani acting without opposition because of the paralysis of the stapedius.

Etiology.—Of etiologic importance are injury at birth through forceps delivery, individual predisposition or congenital narrowness of the bony canal, and occasionally the integrity or resistance of the nerve may be impaired through blows on the ear or an attack of mumps.

Among the exciting causes, cold or exposure to draught is admitted too frequently to be ignored, and not infrequently it will be found that an electric fan or an open window may be charged with the draught. These cases are spoken of as "rheumatic" by the Germans, but it is questionable

whether an association with rheumatic infection can be demonstrated.

If cold alone were responsible, one would expect to find the cases more frequent during the winter months—a view held by Gowers, but in studying a large series of his own cases, as well as the tables of Bernhardt and Hübschman, Waterman was unable to find either an increase in the number of cases or that the cases were more severe during the winter months than the summer months.

Recurrent attacks and the attacks occurring in other members of the same family are explained by Sarbo³ by a possibly inherited anomaly or congenital narrowing. He thinks the paralysis in such cases is due, not to an infection, but to circulatory disturbance, causing pressure. In support of pressure as a cause Rydel¹ reports an instance of peripheral facial paralysis associated with hyperacousis, analgesia of the tongue and loss of taste on the same side which came on after heavily yawning, most likely causing pressure of the nerve against the wall of the Fallopian canal following luxation of the jaw.

Regarding recurrences, the view has obtained that there is a tendency to recur in the same individual, and also in other members of the family. In the fifteen cases used as a basis of this contribution, there were two recurrences: one after an interval of six weeks in a young girl, in whom the opposite side of the face was affected; and another in a man of seventy-four years, in whom the lower branches of the same side became more severely affected while under treatment and owing to the contraction of a rather severe cold. It is questionable whether sufficient evidence, independent of environmental conditions similar to those responsible for the first attack, can be brought to confirm the view that attacks are more prone to recur in the same individual than in others under the same influences.

Other causes of paralysis of the face are tuberculous glands of the neck, neoplasms in the parotid gland, wounds of the temporal bone, fractures of the base of the skull, caries of the mastoid or middle ear—tuberculous or syphilitic—tumor of the auditory

nerve or in the pons, and lesions of the brain or its peduncles.

Also important etiologically are those cases associated with ear disease. It is quite often the case that after a carefully performed mastoid eurytomy and when it is known that the facial nerve was not injured, a facial paralysis follows. It will be interesting to know whether these cases are the result of pressure from post-operative edema or whether the operation has facilitated the absorption and neural influence of bacterial toxins. The latter seems best to coincide with the clinical conditions, and is strengthened by the case described by Darkschewitsch and Tichenow⁵ who found in an otitic facial paralysis a simple neuritis, which they thought they could not directly trace to the carious process.

Pathology.—Minkowski⁶ in 1890 was the first to describe the pathologic findings in a case due to cold. The nerve was normal from the medulla to the geniculate ganglion, but showed well marked degeneration from the ganglion to the periphery. The neuritis was parenchymatous and not interstitial, without participation of the neurilemma; not all fibres were affected.

While this view has had considerable support, including Dejerine, Alexander, André, Thomas, Flatau and others, it is rather difficult to accept in those cases of complete loss of motion in which prompt vesication over the mastoid is followed by rapid return of function leading at times to recovery in from 7 to 10 days. Much more likely are such cases to be accounted for by pressure, as Landois⁷ states, through exudation “perhaps at the situation of the lymph-space discovered by Rüdinger at the inner side of the Fallopian canal between the periosteum and the nerve, an invagination of the arachnoid sac”.

L. Pierce Clark⁸ takes exception to this report by Minkowski, characterizing the observations as inexact and faulty in interpretation. In the light of views since established, he declares the findings in the three previously pathologically studied cases—namely those of Dejerine and Theohari, Alexander, and Minkowski—to be quite unreliable because of faulty interpretation. Omitting details, the conclusions of Clark

are: "1. Refrigeration Bell's palsy is in all likelihood a Fallopian neuritis. 2. Strands of the facial nerve are severely compressed by the initial inflammatory swelling in a rigid canal, and in this manner degeneration of the whole periphery of the nerve is induced. 3. The predisposition in some individuals and consequent palsy rest largely on anatomical grounds—a tortuous course and a congenitally narrow canal".

Diagnosis—The loss of motion of one-half of the face, including the brow, with inability to close the eye and without deviation of the tongue, which developed more or less suddenly and without inflammation or injury to the ear, should present no difficulty of diagnosis. If to this is added a loss of taste on one-half of the tongue, slight increase in hearing and loss of faradic electrical response, there should be no doubt.

The chief difficulties arise in the failure to recognize the various modifications of the symptoms in facial paralysis due to lesions elsewhere in the course of the fibres supplying these muscles. Especially important is the distinction between a paralysis of cerebral or central and one of peripheral origin. The chief points to be noted here are the distribution and character of the paralysis. In cerebral forms the upper facial muscles—frontal, corrugator and orbicularis—if affected are but slightly so and recover so rapidly that they are strikingly in contrast with the lower. The inability to close the eye points most strongly to a peripheral type, while a ptosis is invariably a central lesion. In case of doubt it is of value to have the patient try to distend the cheek with the tongue, when, if central, this will not be done on the unparalyzed side. Moreover, in central paralysis, weakness of the arm will be made out; the electrical reactions of the muscles will be preserved; the reflexes, especially the plantar, may be extensor in type, or the paradoxical reflex of Gordon will be extensor and the abdominal subcortical. Likewise a paralysis of the same side of the tongue and soft palate points to responses on the same side will be much diminished or lost, and finally, there will be no alteration in taste. Often in this form

the movements of the muscles in emotional excitement are found to be present when voluntary motion is quite impossible. This is not always true, however, e. g., in a case of subcortical cyst deeply situated under the lower end of the post-central gyrus emotional movement was very markedly affected while voluntary motion but little; and likewise in a recent case of cerebral syphilis emotional movement was lost on the left side, voluntary motion was intact, and a decided amblyopia limited to the right fields was present. Lesions of the facial nucleus will cause a peripheral type of facial paralysis, but there will almost invariably be disturbance of one or more of the bulbar nuclei, especially the abducens (giving rise to paralysis of the external rectus or conjugate deviation), the auditory and the glossopharyngeal.

When the lesion is located peripheral to the nucleus many of the finer points of distinction must be considered, such as loss of hearing, vertigo with the labyrinthine reactions, alteration in lachrymation, disturbance of taste and vasomotor disturbance (absence of sweating), which serve to locate the point of involvement in the various portions of the nerve within the petrous bone.

Prognosis.—Obviously the outlook is to be decided by the nature as well as the severity of the case. The severity is shown by the incompleteness of muscular loss of motion and the tendency to rapid spontaneous recovery, but chiefly by the condition of electrical excitability.

If the faradic current causes responses with a moderate current strength, or but slightly diminished responses compared with the unaffected side, the case may be considered mild and resolution may be expected in from two to three weeks. In two of the series here mentioned complete restoration occurred in ten days. When there is a loss of faradic response and increase of galvanic irritability, with the anodal response equal to or greater than the cathodal, we have a more severe type with which to deal and a longer time will be required.

Treatment.—Having excluded all other forms but the type which this paper was intended to consider and which was referred

to and described as due to cold or exposure, the treatment may be considered with reference to acute or early, advanced and long standing or late cases.

When cases are seen early, within sixty to seventy-two hours, a cantharidal vesication over the mastoid seems to induce a prompt improvement in proportion to the earliness of application. A calomel purge should be given, preferably in divided doses. The use of salicylates is advisable and seems to do good rather in view of the stimulating hepatic influence than of their antirheumatic effect. The eye should be guarded through the use of a shield, bathing and bandaging to keep the lid closed, especially at night. After from two to four days strychnine, increased with moderate rapidity to 1/24 or 1/20 grain, should be given and at the same time gentle massage with the aim of passively exercising the muscles; it is well to advise that voluntary attempts should be made to move the face muscles at the same time. The electrical stimulation should be instituted at frequent intervals and for brief periods when the massage is begun. If no faradic contractions can be obtained the galvanic should be used. Just sufficient current to accomplish distinct motion is advisable, and if the anode causes a contraction with a less current strength than the cathode this should be employed. The faradic should replace the galvanic as soon as contractions are obtained, unless a current strength is required which is painful. It should be borne in mind that electricity has not the slightest enervative value and is used simply to obtain the mechanical stimulation caused by the movement of the paralyzed muscles in order to maintain their nutrition and to avoid atrophy as far as possible.

In the more advanced cases painting the mastoid with caustic solution of iodine or the internal administration of iodide of potassium, or both, may be tried. Massage and electrically induced exercise of the muscles, together with the use of strychnine, may be used advantageously.

Persistent and patient use of these measures will often be rewarded by marked improvement, for, as stated by Bernhardt⁹ even when the muscles have long since lost their electrical contractibility, one must not

despair; he has seen the reappearance of electrical response after having been lost for a year. Recoveries of considerable movement have been observed in cases of even longer standing.

Oppenheim (loco cit.) mentions a severe case in which the first trace of movement appeared after five months, and the improvement was substantial. He also regards electricity as "strikingly successful in recent and often in old standing cases". "I have succeeded", he states, "in some cases in improving, to a certain extent, a facial paralysis dating from early childhood, by electrical treatment commenced at a mature age".

In the long standing or traumatic cases the question of nerve implantation or anastomosis by surgical means may be considered and some cases of marked return of movement are recorded. The facial and hypoglossal anastomosis, and the facial and spinal accessory or descendens noni have been employed. Grant¹⁰ has recorded a brilliant result in a facial-descendens noni anastomosis in a traumatic case in which the nerve had been destroyed by a gun-shot wound in the mastoid. At the present time, in the refrigeration type, unless motion is entirely lost and reactions are absent, one should hesitate until a faithful trial of other measures has been made; while in the traumatic cases, when it is known the nerve must be destroyed, such delay is not warranted, and neuroplastic procedures offering a prospect of motion must be done early, since the chances of gain diminish as the degeneration and wasting of the muscles progress.

324 Mack Block.

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DISCUSSION.

Howell T. Pershing, Denver: This type of paralysis, Bell's palsy, does not come very frequently under the care of any of us, and yet the

cases that do come are very important, and we shall have to decide within a limited time as to their nature and the prognosis and treatment. My experience has been very much the same as Dr. Moleen's, and I take the same view of the etiology which he has emphasized, namely, the people who suffer from Bell's palsy generally do so because the canal in which the nerve travels, the facial or Fallopiian canal, is long, crooked and narrow, and if it is narrowed the least bit more than it is in normal individuals, the nerve has no room for swelling. Then, if the patient is exposed to cold on one side, such as might ordinarily cause slight rheumatic symptoms, or stiff neck, and a little pain about the ear, this nerve may swell and there is no room for it to swell. Immediately pressure is exercised, the nerve fibers will not withstand the pressure and paralysis ensues. If the pressure is severe enough and prolonged for any time, then degeneration of the nerve fiber takes place from the point of pressure down to the muscles. The hereditary cases then would be explained from the fact that there was normally undue narrowness of this canal in the family. For instance, I had four cases in one family, in three members of the family. The father had two attacks of facial paralysis on the same side, his son had an attack of facial paralysis, and his daughter had one. I had the opportunity of treating them in all four attacks. Of course, it is more than a coincidence that so many cases should have occurred in one family. I may say that the undue sensitiveness of the nerve tissue might be hereditary as well as undue narrowness of the canal, and we cannot prove the narrowness of the canal because the disease is not fatal, and opportunity for measurement in these cases practically does not exist. Nevertheless, I think narrowness of the canal explains the etiology better than any other hypothesis.

The diagnosis Dr. Moleen has emphasized, first the diagnosis between the peripheral and central facial paralysis, which is easily made from the severity of the paralysis, and the upper part of the face being paralyzed in the peripheral cases, and a very slight degree of paralysis in the upper part of the face in the central cases. Then of course one must look to see that the tongue, limbs and eyes are not involved before concluding it is merely a case of Bell's palsy.

The prognosis is of the utmost importance. Patients want to know at once how long this is going to last, and women in particular are very much distressed by the disfigurement, and they are anxious to be assured that the normal shape of the face will soon be restored. I rely on the degree of severity of the paralysis. If, in the early days of the attack the patient is still able to move all the muscles of the face to some extent, I take a favorable view of it. If there is no voluntary motion of the affected side, it is a pretty severe case. If the lower lid remains in contact with the eyeball, that is a very favorable point, because it is very distressing to have the eyeball uncovered, and the cases in which it is uncovered are likely to be severe. With reference to the electrical reaction, if there is some faradic irritability in the affected muscles after two or three days, it is a favorable case. If there is none at all, it is going to be a severe case. If with the galvanic current the muscles will act better with the negative than with the positive, although fairly well with either, that is favorable. If your case shows manifest improvement in the first or second week, you can be pretty confident it will go on and make a rapid improvement.

As to treatment, if I get the case early, I put a blister behind the mastoid; I give salicylates on

the theory that if it is not rheumatic it is something like rheumatism, and the salicylates do good in almost anything that resembles rheumatism. Personally, I believe these cases are rheumatic and probably infectious, and exposure to cold lowers resistance and allows infection to get a start. But at any rate I approve of the treatment which is recommended by Dr. Moleen. As to the electric treatment, I prefer the galvanic current to the faradic throughout the case, but there is a type in which no electrical treatments do good. We occasionally see a patient with an old paralysis, showing inequality of the two sides of the face, and we think that the left side is paralyzed, but when we come to look it is the right side that is paralyzed, although the right side is wrinkled more than the left. There the paralyzed muscles have undergone contracture, and it is only through voluntary or involuntary motion or inactivity that the error is corrected. If such cases are treated with electricity, you not only do not do any good, but you probably do some harm.

T. A. Stoddard, Pueblo: It would seem almost presumptuous on my part to take issue with Dr. Pershing in matters of this kind, but speaking of the etiology, there is no doubt it is not due to the swelling of the nerve itself, but the lining of the cavity through which the nerve passes.

J. A. Patterson, Colorado Springs: I should like to put on record a series of cases in one family. The mother had one or two attacks of Bell's palsy; her daughter had one attack, and the son had three attacks. The last one was very persistent, although there was almost complete recovery, some weakness of the eyelid and side of the mouth remaining. There was one point in Dr. Moleen's paper that appealed to me very much, and that is that these cases are prone to have more than one attack. That point has not been emphasized. I have seen cases that have had one attack, and some years hence, probably not many, they would have another attack.

G. A. Moleen (closing): The last speaker referred to recurrent attacks. I mentioned two cases in my series in which there were recurrent attacks in the same individuals; one in a young girl, and the other is an old man of 74 years while he was under treatment and was exposed to a severe cold. This old gentleman had a more severe recurrence on the same side after having shown considerable improvement. The young girl, however, had a recurrent attack on the opposite side. It has been a question as to whether these attacks were more likely to recur in the same individual. The same thing is true of hereditary influence. Whether that is due to a diminished resistance on the part of the nerve structures in that family, or whether the environmental influences in the family have been the same, is a point that must be settled. We do not find them so often in the great number of facial paralyses as has been mentioned in the literature. Swelling of the periosteum in the canal is the most likely cause.

As to the galvanic current, since electricity is not used for its therapeutic effect but to get exercise of the muscle fiber itself, I think a current with less strength and higher effectiveness is the one of choice, and for that reason, and for no other, galvanic current strength is required in higher voltage than the faradic.

As to the rheumatic origin of the trouble, this was the view held by the Germans. They used the salicylates for their general effect, and through the hepatic stimulating influence which is characteristic of the salicylic acid group, as well as their antirheumatic effects, they secured good results.

COLLOID CHEMISTRY IN ITS RELATION TO MEDICINE*.

PHILIP HILLKOWITZ, M.D., DENVER.

From time immemorial the healing art has borrowed extensively from other branches of knowledge. The physician of antiquity and the Middle Ages and even of the Modern Period was well versed in botany to which he owed his knowledge of the herbs used in his practice. Some of the earlier studies on the American flora, Howard Kelly tells us, were made by members of our profession.

The science of physics has contributed not a little to place medicine on a scientific basis. Its principles form the foundation of our knowledge of physiology and its application in the domain of mechanics, heat, sound, light and electricity in the diagnosis and treatment of disease are too obvious to require detailed comment.

Chemistry, too, has done its share in adding to our stock of information on the intricate processes of metabolism, besides furnishing from its inorganic and organic storehouses the drugs to combat disease or alleviate pain.

Wherever, then, in the vast magazine of human knowledge medicine finds anything that can further its progress it quickly appropriates it for the benefit of mankind.

Chemistry, like medicine, has become a vast field with many ramifications and specialties which find their application in numerous arts and industries. To the grand divisions of inorganic and organic chemistry a separate branch, physical chemistry, has been added. The newest subdivision of this branch which has an important bearing on medicine is colloid chemistry.

The scientific study of colloids is of very recent origin. We owe the name to Thomas Graham, the Scotch chemist who in the *Philosophical Transactions* of 1861 designated such substances of low diffusibility as could not, when in solution, pass through an animal membrane as colloids (from the Greek *κσλλα* glue, the latter being the

most representative example of this class). Those substances that were capable of passing through the membrane in the outer solution he named crystalloids. The process is termed dialysis. The apparatus for testing osmosis, familiar to all students of medicine, is very simple, consisting of a piece of parchment paper tied securely on a hard rubber or glass ring and floated on a dish of distilled water which is renewed as necessary. The parchment is also made in the form of hollow shells or cylinders, the substance to be dialyzed being placed inside the shell, which is put in an Erlenmeyer flask or wide test tube containing distilled water. The latter form is the one employed in the Abderhalden test for pregnancy.

Solutions of salt, sugar and most crystallizable materials find their way through the membrane into the surrounding water, while substances like glue, hemoglobin, gelatin, mucilage, dextrin, starch and albumin do not permeate the membrane.

While Graham's classification applies aptly to the examples above mentioned, it is known now that there is no hard and fast line between colloids and crystalloids, as there exist substances on the border line. Their diffusibility depends on the density of the animal membrane and the size of the molecules of the substance in question. Membranes are made of various degrees of porosity which offer greater or less resistance to the passage of materials. We also know at the present time that all crystallizable substances are not necessarily crystalloids. Thus hemoglobin and some other albumins that can be obtained in a crystalline state are nevertheless colloids.

The diffusibility of substances through animal membranes has been found by later investigators to depend on the size of their respective molecules. And here we enter on what is probably the most interesting, one might say dramatic, phase of the subject—the size of a molecule. To most of us the word molecule is associated with a hypothesis, not an actuality, though its existence can no longer be doubted. The size of a molecule is about as tangible as the conception of the magnitude of the half million

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dollar Anglo-French loan. Yet these colloid chemists have actually translated the size of the colloid molecule into terms intelligible to the mind, into fractions of micromillimeters. The ultramicroscope is the instrument responsible for wresting this secret from Nature. With its aid, particles invisible through the ordinary microscope betray their presence and apparently transparent solutions are unmasked as mere suspensions.

That molecules vary in size has been known for some time. The molecule of hemoglobin has been computed by Hüfner to weigh 16,500 as compared with the hydrogen molecule as a unit. It stands to reason, therefore, that a molecule of this size will be unable to pass through the infinitesimally minute pores of an animal membrane, while a molecule of sodium chloride weighing 58.5 will go through flying.

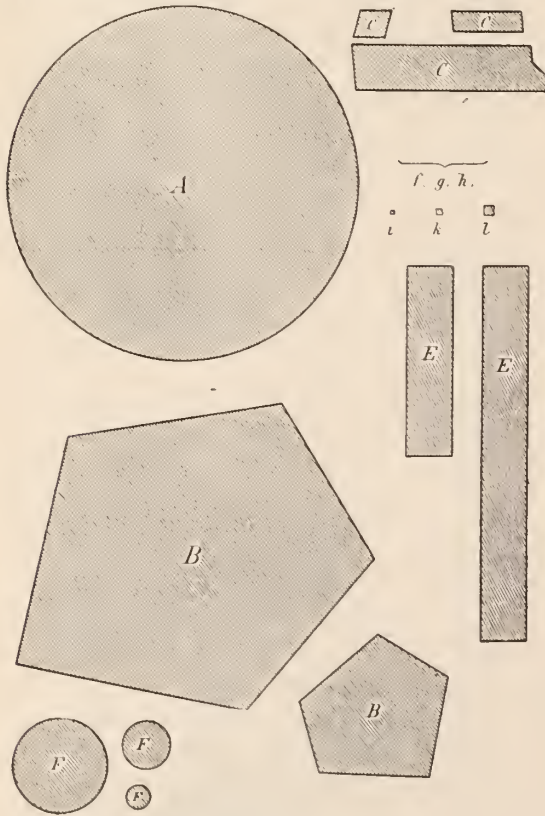


PLATE I.

Linear Magnification 1:10,000.

A. Human red blood corpuscle, diam. 7.5 microns. Thickness 1.6 microns.

B. Particles of starch granules from rice 3-8 microns.

C. Particles of a suspension of kaolin.

D. Anthrax bacillus (length 4-15 microns) thickness about 1 micron.

E. Cocci (diam. 0.5-1 micron).

F, G, H. Particles of a colloidal gold solution (0.005-0.15 micron).

I, K, L. Particles of sediment in gold suspension.

The solutions of colloid metals, such as those of gold, silver and platinum, have offered favorable study for the determination of the size of particles in suspension. The words "solution" and "suspension" have, it must be confessed, been used here rather loosely. Strictly speaking a solution is a homogeneous combination, the molecules of the dissolved substance lying uniformly among the molecules of the solvent. No particles of the former should be visible with the microscope. A suspension is ordinarily considered as a sort of mixture of two immiscible substances, the particles being apparent to the naked eye or at least under the microscope. The ultramicroscope has changed our conception, for it detects particles in what have previously been termed solutions. In other words there is no sharp line of demarcation between solutions and suspensions. In the solutions of the colloid metals most of the particles are invisible to the ultramicroscope. This demonstrates the fineness of division of the element. A solution of colloidal gold is perfectly transparent so far as the naked eye can discern.

Returning to the size of molecules and particles in suspension, the charts here shown reproduced from Zsigmondy's classic monograph, illustrate better than words the relative size of various small structures as compared with particles of colloid metals and molecules of familiar substances. Their dimensions are given in micromillimeters (micra) and micromicromillimeters (millimicra). Particles invisible with the microscope but seen with the ultramicroscope are termed submicrons while those that are invisible with the latter are termed amicros. Both of these are known as ultramicros.

Although it is not the object of this paper to give other than the most meager résumé of colloid chemistry as related to medicine, it will not be amiss to explain some terms used in this science which frequently find their way in medical literature. Colloids when dissolved in water are called hydrosols, in alcohol alcosols, and in an organic solvent organosols. All of these are usually referred to as "sols" for short.

Many colloidal solutions are transformed into a jelly-like substance when their solvent is removed or when certain reagents are added. These are known as hydrogels or just "gels". If on adding the original solvent they go into solution again, they are known as reversible colloids, otherwise as irreversible.

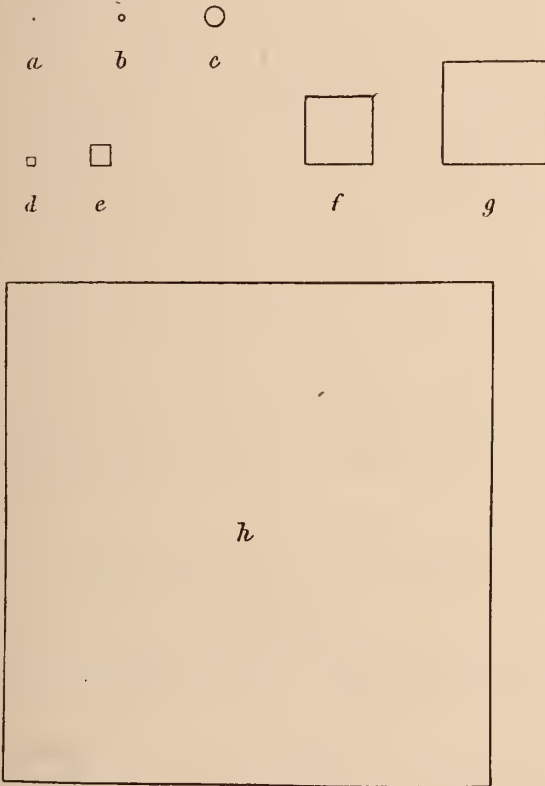


PLATE II.

Magnification 1:1,000,000.

- a. Hydrogen molecule, diam. 0.1 millimicron.
- b. Chloroform molecule, " 0.8 millimicron.
- c. Hemoglobin molecule, " 2.5 millimicrons.
- d. Gold particles } 1 millimicron.
- e. Gold particles } in colloidal gold 3 millimicrons.
- f. Gold particles } solution. 10 millimicrons.
- g. Gold particles } 15 millimicrons.
- h. Sedimented sub-microscopic particle of gold.

Colloid Metals.

Physicians are familiar with the application of colloid silver in medicine. In the treatment of Neisserian affections of the urethra or conjunctiva it has become a routine medicament. Urologists employ colloid silver in diagnosis, for making skiagrams of the ureter or kidney pelvis. It would therefore be profitable to dwell a moment on the nature of this curious solution of metal ordinarily considered insoluble in water.

As far back as 1685, Andreas Cassius brought out a solution of gold known under

his name as the purple of Cassius. Its exact composition was not divined until recently. It is, however, of historical interest that Faraday in 1857 made an extensive study of this colloid solution of gold, recording his observations together with the proof that the sediment that formed in the bottom was actually metallic gold. Being written before Graham laid down the fundamental principle of colloids, his results, remarkably exact as they were, remained in obscurity for forty years, to be resurrected after present day investigators had confirmed his findings.

Certain metals, such as platinum, gold and silver, can by one of several processes be subdivided so minutely that the particles will not sink to the bottom but be suspended or arranged uniformly in the solvent, so as to form a perfectly homogeneous and in sufficient dilution absolutely transparent solution. One of these processes is to atomize the metal in the electric arc. Another method applied to silver by an American, Carey Lea, in 1889 created a great sensation in opening up a new field of science and industry. It is produced in the wet way by the addition of certain chemicals to a solution of nitrate of silver. The violet precipitate that forms is very soluble in water and the particles are indistinguishable under the microscope. Originally the medicinal preparations of colloidal silver, such as collargol and unguentum Credé, were made according to Lea's formula. Later a protective colloid was added to make the solution more durable.

This brings us to a phenomenon which is made use of in Lange's colloidal gold test for the examination of cerebrospinal fluid. When an electrolyte such as a 10 per cent solution of sodium chloride is brought in contact with a solution of colloid gold, the latter is precipitated, its particles aggregating into larger ones, their relatively greater specific gravity sending them to the bottom, and the solution which was previously red becomes colorless. If prior to the addition of the salt solution certain albumins or gelatin had been mixed with the colloid gold, such precipitation would not have taken place, due to the phenomenon of

adsorption. By this is meant the condensation of liquids or gases on porous or even flat surfaces. A familiar example of this process is the retention of coloring matter and of odors by charcoal. In the case of the colloid gold solution, the fine particles of gold are adsorbed by the particles of albumin or gelatin, the latter forming a thin coating on the former, making the combination resistant to coagulating agents.

Zsigmondy, whose name is closely linked with the progress of colloid chemistry, has determined the "gold count" of different albumines, i. e., the smallest amount in milligrams of protective colloid necessary to prevent the change of color in 10 cc. of colloid gold solution (from red to violet) which would be produced by the addition of one cc. of a 10 per cent solution of NaCl. Lange has modified the gold count empirically to apply to the examination of the cerebrospinal fluid in ascending dilutions. The technique and interpretation of this test will be presented in a paper by Dr. Wm. Whitridge Williams.

The rôle of the colloids in biology is of still greater significance to us as physicians. All living things, whether animal or vegetable, are largely made up of colloids. The cell structure is essentially colloid and protoplasm is but a gel. The complex processes that go on in these units of our body, the intricate and ceaseless sequence of building and destroying that is constantly taking place in cell metabolism, are but manifestations of the chemistry of colloids whose mysteries are still to be explored.

In the fertile field of serology attempts have been made to explain some of the phenomena of immunity on the basis of colloid reactions. Thus the action of antigen on antibody, instead of being a complicated inexplicable biologic process, is considered by Traube and his school as coming under the well known laws of colloid chemistry. As proof of their contention the following facts are adduced. A suspension of typhoid bacilli, when brought into contact with anti-typhoid serum, will not be agglutinated if the medium is free from NaCl. The salt acting as an electrolyte favors agglutination, a common observation in colloid chem-

istry. Again, only colloids are capable of producing antibodies, crystalloids not possessing that property. Hence, they say, there is no need of the conception of a haptophore and ergophore group or of receptors. Traube even goes so far as to endeavor to explain the entire problem of immunity on the ground of colloid interaction as against the complicated though ingenious side chain theory of Ehrlich. While this colloid theory has considerable plausibility, and admitting that colloids do play an important rôle in serologic phenomena, nevertheless it cannot satisfactorily explain the specificity of immunologic reactions nor the overproduction of the free receptors.

There is no doubt, however, that this new science offers a promising field for medical research. In view of the great advances that have already been made, the hope is high that many obscure problems in medicine are destined to be solved in the near future by further studies in colloid chemistry.

730 Metropolitan Building.

LANGE'S COLLOIDAL GOLD REACTION.*

WM. WHITRIDGE WILLIAMS, M.D., AND WARD BURDICK, M.D., DENVER.

Introduction.

The examination of the cerebrospinal fluid is necessary for the proper study and understanding of many neurological and mental diseases. By means of it we gain much of both diagnostic and prognostic value. There are three determinations of recognized importance; namely, the Wassermann reaction, the number of cells, and the amount of protein contained in the fluid. The last is the so-called Phase 1 of Nonne⁶. When positive, it is commonly considered as representing an increase of globulin, but it is well known that it is merely a group reaction and gives us no information regarding the variety of protein present. A pathological cerebrospinal fluid may contain many different proteins. It

*From the Laboratory of the National Jewish Hospital for Consumptives, Denver, Colorado.

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was with the view of studying these substances more minutely that Lange³ adopted methods that led to the discovery of the reaction concerning which this paper is written.

It was known that colloidal solutions of gold and other metals were precipitated or flaked out by an electrolyte, such as sodium chlorid, and by solutions of proteins. It remained for Zsigmondy⁴, following exhaustive studies on colloidal gold solutions, to discover the fact that certain proteins possessed the property of inhibiting or preventing the precipitating action of an electrolyte on a colloidal gold solution. He found that when a definite quantity of a protein was added to a given amount of colloidal gold and sodium chlorid no precipitation occurred and the solution retained its original red color. This protective action was found to be different but specific for each protein examined. Each protein substance is therefore characterized by its perfectly definite protective power.

Lange³, in 1912, attempted to make use of this gold protection method of Zsigmondy in an investigation of the various proteins occurring in the cerebrospinal fluid. He was surprised to find, however, that instead of these proteins possessing protective powers, they actually caused precipitation of the gold, especially when they were present in an abnormal amount. He found that any spinal fluid which gave a positive test for protein, the Nonne-Apel't reaction, also gave a positive gold reaction characterized by partial or complete precipitation of the gold solution which was made manifest by changes in color of the clear, red solution. He noted also that the reaction occurred most markedly only with certain dilutions of the fluid and appeared to be specific, thus enabling him to differentiate syphilitic from non-luetic affections of the central nervous system. For instance, he observed that fluids removed from cases of syphilitic meningitis, tabes and paresis reacted very differently from those derived from individuals with suppurative meningitis of any kind or other non-syphilitic conditions of the cerebrospinal tract. He noted that fluids from paretics gave a very

intense and characteristic reaction and felt that he was justified in making a diagnosis of dementia paralytica from it alone. This observation has been repeatedly confirmed and some claim that such a reaction is pathognomonic of the disease. We do not agree with this statement, because in two cases we have obtained a typical paretic reaction in which a trustworthy diagnosis of paresis was lacking. We endorse the following statement made by Miller, Brush, Hammers and Felton⁵: "One need but study the literature to become convinced of the fact that no one reaction or group of reactions obtained from the cerebrospinal fluid is pathognomonic of any syphilitic disease of the central nervous system." However, we wish to emphasize that the test has great diagnostic, as well as prognostic, value in syphilitic conditions of the nervous system. In several instances it has aided in determining the correct diagnosis when the other spinal fluid tests have been partly or completely negative. Eskuchen¹ declares that the reaction possesses a greater degree of specificity and sensitiveness than any of the "four phases" of Nonne, and suggests that it be called "the fifth reaction".

Preparation of Colloidal Gold.

The entire value of the test depends upon the correct preparation of the gold reagent used as indicator. Everyone who has attempted to make the solution has sooner or later met with disappointment due to some inexplicable failure to obtain a suitable mixture. Using exactly the same reagents and technique, it happens at times that an unsatisfactory solution results. It has also been the experience of many when they have succeeded in making a beautifully clear, red solution that it completely fails to react with a known positive paretic fluid or gives a reaction with a normal fluid. We feel that such occurrences as these have been responsible for discouraging the more widespread use of the test and account for the variable results obtained by many workers.

For the past two years we have used the technique employed by Lange, which is a modification of Zsigmondy's method. It consists of the reduction of gold chlorid by means of formaldehyde in the presence of a

weak alkaline solution. Before use we have standardized the transparent, red solution by testing its reactive power with a normal and with a known paretic fluid, as well as determining that 5 cc. of it were precipitated by the addition of 0.8 cc. of 2 per cent. sodium chlorid solution and allowed to stand over night. We abandoned this method, however, when the excellent article by Miller, Brush, Hammers and Felton was published in December, 1915. Since then we have followed their technique and have obtained perfectly satisfactory results.

The Reagents Used.

1. The gold solution:

Gold chlorid, Merek, acid.....	1.0
Water, triply distilled, up to....	100.0
2. The alkaline solution:

Potassium carbonate, Merek's blue label reagent	2.0
Water, triply distilled, up to....	100.0
3. The reducing agents:
 - a. Formaldehyde, Merek's U. S. P. VIII, highest purity.....
 - Water, triply distilled, up to....

	1.0
	40.0

 - b. Oxalic acid, Merek's blue label reagent
 - Water, triply distilled, up to....

	1.0
	100.0

Solutions two and three must be made up immediately prior to use.
4. Bichromate cleaner for glassware:

Potassium bichromate, powdered	200.0
Water, distilled, up to.....	1,500.0
Sulphuric acid, concentrated....	500.0

Before starting to make the colloidal solution it is absolutely essential that all the glassware to be used shall be scrupulously cleaned. This is done effectively by scrubbing them thoroughly with soap and hot water, rinsing for several minutes in running tap water, then immersing them in, or filling them with, the bichromate-sulphuric acid mixture for at least one-half hour. When ready to use, the cleaning fluid is emptied out, the utensils are rinsed well in running water, then with distilled water, and finally they are flushed with triply distilled water. It is also necessary to use pure water, which can be obtained by distilling it three times, and it should be used as soon as possible after the third distillation because upon long standing it becomes unfit for use in making the gold solution. There should be no rubber connections on the still.

With perfectly clean glassware, triply distilled water, and properly made reagents at hand, the process of making the gold solution is comparatively simple.

Five hundred cubic centimetres of triply distilled water are placed in a beaker and, using a four-burner Bunsen, the temperature is gradually raised to about 50°C., when the gas is turned on full. When the temperature has reached 60°, 10 cc. of the 1% gold chlorid solution and 7 cc. of the 2% potassium carbonate solution are added simultaneously. The solution should remain perfectly clear. At 80°, while stirring with a thermometer, add slowly ten drops of the oxalic acid solution. When the temperature has reached 90°, the flame is withdrawn and, while stirring, 5 cc. of the formaldehyde solution are slowly added, a drop at a time. If the solution becomes pink before all the reducing agent has been added, stop at once, because reduction will continue to the final end-point, which is marked by the production of a beautiful, brilliant, clear, orange-red solution. We agree with the statements of Miller, Kaplan² and others that the best solutions are those in which the color changes develop slowly.

Having made a satisfactory looking solution, how can it be standardized? The most important part of the work of Miller and his associates concerns the solving of this problem. Briefly, they found that there are two general types of metallic solutions, the "protected" and the "non-protected". A protected solution is not precipitated by an electrolyte, while the non-protected is. Only non-protected solutions are suitable for the gold reaction. In working over three hundred different lots of colloidal gold, they found that, for all practical purposes, a non-protected solution was one 5 cc. of which would be completely precipitated by the addition of 1.7 cc. of a 1% sodium chlorid solution in one hour's time. They then observed that not all non-protected solutions behaved suitably, and discovered this to be due to their chemical reaction. After many experiments they concluded: "Finally, it was found that a neutral colloidal gold solution produced the typical reactions with a known paretic and luetic spinal fluid, but

never induced color changes with a known negative fluid. This last observation seemed to give the key to the situation, for it was now apparent that any solution to be of value in this test must be of a 'non-protected' type, and of a neutral reaction'. Using alizarin red as an indicator, they offer a simple method for determining the reaction of the solution and how to neutralize it. We have been using Gruebler's Alizarinsulfosäure. Natron, made up as a 1% solution in 50% alcohol, and have obtained excellent results.

The following are offered by them and endorsed by us as suitable standards for a satisfactory colloidal gold solution:

"(1) It must be absolutely transparent and preferably of a brilliant red orange, or salmon red color.

"(2) Five cc. of the solution must be completely precipitated by 1.7 cc. of a 1% sodium chloride solution in the time interval of one hour.

"(3) The solution must be neutral in reaction on the day on which it is used.

"(4) It must give a typical reaction curve with a known paretic cerebro-spinal fluid.

"(5) It must produce no reaction greater than a No. 1 with a known normal cerebro-spinal fluid".

Technique of the Test.

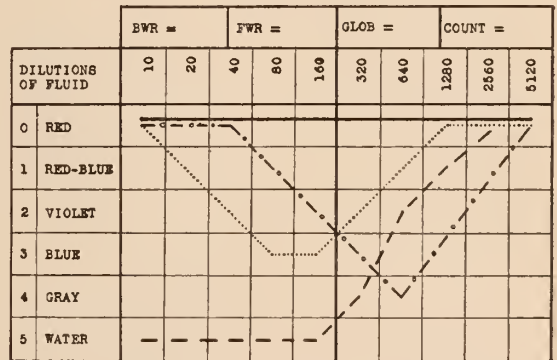
The spinal fluid should be obtained under aseptic conditions, using a clean, dry needle, and should be collected in a clean, sterile test tube. If blood appear in the fluid it is unsuitable for the test. This can usually be avoided by discarding the first portion of fluid and collecting the remainder in a second tube.

The test is carried out as follows: Eleven perfectly clean test tubes are set up in a rack. In the first tube place 1.8 cc. of a freshly prepared 0.4% sodium chlorid solution made with triply distilled water, and 1 cc. in each of the other ten. Now add to the first tube 0.2 cc. of the spinal fluid to be tested. Mix thoroughly. Thus we have 2 cc. of a 1:10 dilution. Remove 1 cc. of this mixture and add it to the second tube, making 2 cc. of a 1:20 dilution. By removing 1 cc. from each tube and adding it to the

next one, which already contains 1 cc. of salt solution, we obtain a series of dilutions ranging from 1:10 in the first to 1:5120 in the tenth tube. The tenth tube will contain 2 cc., so it is necessary to throw away 1 cc. of it. The eleventh tube has no spinal fluid in it and serves as a salt solution and color control. Now to each of the eleven tubes 5 cc. of colloidal gold are added, and the tubes are shaken thoroughly and set aside for future examination. As a rule they are allowed to stand over night, when the readings are made. With experience, however, it is often possible to predict the end-result after about one hour.

To record the result of a test it is convenient to represent it graphically as shown in Chart 1.

CHART 1.



Illustrating a chart upon which the various color changes may be recorded. In this, as in the succeeding charts, the abbreviations in the top row signify the following: BWR is the blood Wassermann reaction; FWR, fluid Wassermann; GLOB, globulin test; COUNT, the cell count; +, positive or increased; —, negative or decreased; ±, doubtful.

In this chart it will be noted that the color changes range from red, through violet, blue, and gray tints to colorless or water color. For ease in recording, numbers have been attached to the various colors; thus 0 signifies the normal red and 5 the colorless or when complete precipitation has occurred with the other numerals representing various gradations between the two.

A negative fluid or one obtained from a normal individual produces no change of color in suitable colloidal gold solutions. A positive fluid, however, causes partial or complete precipitation of the gold, manifested by color changes which occur in curves and which seem to be more or less

specific for certain diseases, especially those of the central nervous system of syphilitic origin. It has been noted that the greatest color changes occur within certain dilution limits. Thus, fluids from cases of tabes and cerebrospinal lues usually give the most marked color changes in the dilutions of 1:80 and 1:160, and with such constancy that the terms "luetic zone" and "luetic curve" seem proper. Fluids from various non-syphilitic types of meningitis produce the maximal change only in the higher dilutions, as 1:640 and 1:1280, and form what might be termed the "non-luetic" or "meningitic" curve or zone. Paretic fluids cause complete precipitation in the first four to eight dilutions—1:10 to 1:320—with such regularity that Miller and Levy⁵ suggested the term "paretic curve". These various types of curves have been sketched in Chart 1, with the ——— line representing a normal curve; the line, a luetic curve; the —o—o—o— line, a non-luetic curve, and the - - - - - line, a paretic curve. These curves are represented by figures as follows:

Normal	=	00000,00000
Luetic	=	01233,21000
Non-luetic	=	00012,34210
Paretic	=	55555,42100

Material Examined.

The material upon which this report is based consists of 263 gold reactions with the spinal fluids from 184 different individuals. The following routine examination has been made on all fluids when possible:

1. The Wassermann Reaction.

The hemolytic system consists of one-half the quantities employed in the original test; namely, 0.5 cc. of 10% complement, 0.5 cc. of a 5% suspension of sheep's corpuscles, and the end-volume brought up to 2.5 cc with 0.85% sodium chlorid solution. The antigen used is either a plain alcoholic extract of human heart or the same reinforced with 0.4% cholesterol. In many instances both antigens have been used. The amount of spinal fluid tested has of necessity varied but always when there has been sufficient of it we have put up the following doses: 1.0 cc., 0.8 cc., 0.6 cc., 0.4 cc., 0.2 cc., and

0.1 cc. Just prior to putting up the tests the antishcep amboceptor is titrated against 0.2 cc. of 10% complement and 0.5 cc. of 5% corpuscles, and the amount first causing complete hemolysis after one-half hour's incubation in a water-bath at 38° C. is adopted as the dose. By means of titrating in this manner we are sure of using two and one-half units of complement in the test. This is advisable particularly when a cholesterolized extract is used as antigen, because such extracts possess a varying amount of natural anticomplementary constituents; a fact which has been pointed out by numerous workers.

In nearly all of the cases a Wassermann test has also been made on the blood serum, using the following five antigens: (1) alcoholic extract of human heart, (2) cholesterolized alcoholic extract of human heart, (3) cholesterolized alcoholic extract of guinea-pigs' hearts, (4) acetone insoluble lipoids of human heart, and (5) alcoholic extract of fetal syphilitic liver. Of these we have found the cholesterolized human heart extract to be the most sensitive and the last to become negative as the result of anti-syphilitic treatment.

2. Globulin Test.

The Ross-Jones⁷ modification of the original Nonne Phase 1 reaction has been employed. It consists of layering the spinal fluid upon an equal amount of a saturated aqueous solution of ammonium sulphate. When positive, a whitish ring appears at the contact zone.

3. Cell Count.

This has always been made by means of the Fuchs-Rosenthal counting chamber (Zeiss) using a diluting fluid containing 10% of acetic acid and some methylene blue.

4. The Colloidal Gold Reaction.

Results.

It seems advisable to classify the cases examined into four main groups, based on the clinical diagnoses, and then discuss the results obtained in each group with the gold test.

1. Miscellaneous Group.

This group comprises 96 tests on 79 individuals. About one-half of the fluids were

obtained from presumably normal persons; the balance as follows:

Tertiary syphilis	12 cases
Tuberculous meningitis ...	8 cases
Syphilitic history	7 cases
Epilepsy	3 cases
Cerebrospinal meningitis ..	3 cases
Dementia precox	2 cases
Multiple sclerosis	2 cases
Secondary syphilis	2 cases
Brain tumor	1 case
Morphinism	1 case
Uremia	1 case

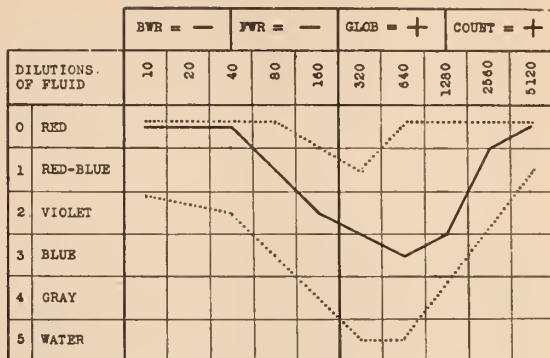
In none of the twelve cases of tertiary syphilis were there any evident clinical signs of involvement of the central nervous system. However, eight of the fluids gave reaction in the luetic zone. One gave a 55542,10000 curve; very suggestive of paresis, but which has not been verified clinically. The other positive curves, and one of the two fluids from secondary lues, were much less marked and a doubt exists what significance should be attached to them. All of these cases gave a positive blood Wassermann reaction and five of them also gave a positive fluid Wassermann. Such results as these emphasize the importance of repeated examinations of the spinal fluid of syphilitics, because by so doing probably many cases of incipient cerebro-spinal involvement will be discovered at a time when specific therapy holds out its greatest promise of benefit.

Amongst the seven cases giving a luetic history, but apparently cured, three gave a positive blood Wassermann only with the cholesterinized antigens and two a positive fluid Wassermann. These two fluids presented increased globulin, cell counts of 4 and 36, and both gave luetic zone gold reactions.

The cases of tuberculous and epidemic cerebrospinal meningitis gave such similar gold curves that they will be discussed together.

By referring to Chart 2 it will be noted that the maximal color changes always occurred in the higher dilutions, to the right of the center line. It is a characteristic which was called by Lange "Verschiebung nach oben"—a term which appears in all the literature on the gold test. While the type of curve differs distinctly from the luetic and paretic curves, it is in no way a

CHART 2.



The solid line indicates the average "non-luetic" or "meningitic" curve and the dotted lines represent the extreme curves obtained in our cases of suppurative meningitis.

diagnostic help so far as differentiating the various forms of non-luetic meningitis is concerned.

Two of the cases of epilepsy gave normal curves. The third, however, gave a distinct luetic curve, 01244,20000, with increased globulin and a positive fluid Wassermann. The blood Wassermann was negative. Under antisymphilitic treatment this patient has greatly improved.

The curve from one of the cases of disseminated sclerosis was normal; with the other, the curve was in the paretic zone, 55544,31000, and gave positive globulin and Wassermann tests.

The fluid from the uremic case gave a marked luetic curve, 01342,10000; also, both the blood and fluid Wassermann reactions were positive and the fluid contained an increased amount of globulin.

The curves from the cases of dementia precox, brain tumor and morphinism were normal.

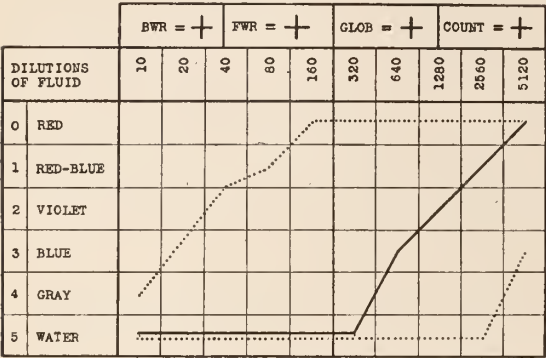
The remaining 38 fluids in this group all gave negative Wassermann and globulin tests; the gold curves were also all within normal limits, by which we mean that the greatest color change never exceeded violet or 2.

2. General Paresis Group.

This group consists of 52 examinations on 46 cases. One case is included here in which a typical paretic curve, 55554,31100 was obtained weeks before the earliest sign of paresis was recognized clinically. Another was excluded, although the fluid gave a definitely paretic curve, 55555,54210, both the

Wassermann and globulin tests were positive and the cell count 70. Over nine months have elapsed and no evidences of dementia have been detected in this patient. It is, however, not wise to assert that paresis may not develop in the future. The patient is 36 years of age.

CHART 3.



General paresis. Average and extreme curves.

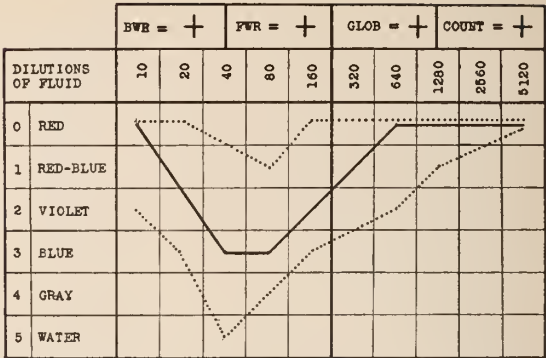
Nearly all the fluids in this group produced very intense and uniform reactions, characterized by complete precipitation of the gold in the first four to six dilutions causing a clear, colorless solution. Lange states that he has obtained precipitation in all ten tubes and that even in a dilution of 1:20480 there was still a blue-red color. On the other hand, he records only a very slight color change, 21000,00000, in a parietic fluid. Our weakest reaction was a 43210,00000 curve, and the strongest a 55555,55554 curve, or complete precipitation in the first nine tubes. With only one exception the fluid Wassermann reaction was positive in all these cases. Our experience corroborates that of practically all other observers that the colloidal gold reaction exhibits its greatest diagnostic value in cases of dementia paralytica. It has occasionally been the single abnormality present in a given serum.

3 and 4. **Tabes Dorsalis and Cerebrospinal Syphilis.**

These two groups possess such common characteristics that they will be discussed together. There were 87 examinations of 41 tabetic fluids and 28 tests on 18 cases of cerebrospinal syphilis.

All of the reactions were characterized by producing their maximal color changes in the third, fourth and fifth tubes; that is, in the luetic zone. They vary so much in

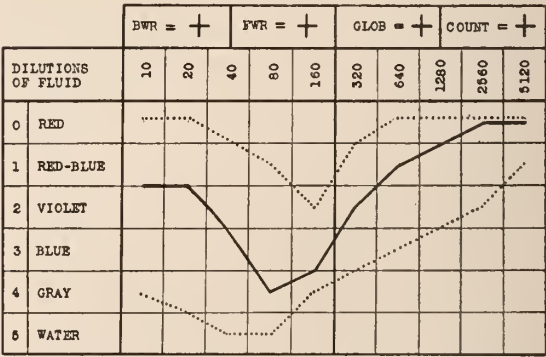
CHART 4.



Cerebrospinal syphilis. Average and extreme curves.

intensity that the reactions do not possess the differential diagnostic value of the parietic curves. However, they are usually so distinctive that they may throw considerable light on an obscure cerebrospinal affection, especially when some of the other spinal fluid tests are negative. In comparing the results obtained with fluids from cases of locomotor ataxia and cerebrospinal syphilis, the gold curves produced by the former are usually more marked.

CHART 5.



Tabes dorsalis. Average and extreme curves.

In the vast majority of the tabetic reactions we have noticed that the contents of the first two or three tubes become a curious color which might be described as an odd shade of pink containing brick dust. This color has appeared so constantly that we feel justified in attaching diagnostic importance to it. We are aware, however, that all other workers with whose conclusions we are familiar state that the gold reactions from these cases exhibit only the distinctly luetic curve and do not serve in the least to dif-

ferentiate between tabes and cerebrospinal lues.

Conclusions.

1. The value of the gold reaction is absolutely dependent on the use of a correctly made and properly standardized colloidal gold solution.

2. Normal cerebrospinal fluids cause no reaction in the vast majority of instances. A slight reaction, when all other tests are negative, probably possesses no significance.

3. Spinal fluids from cases of general paresis produce a characteristic reaction consisting of the complete decolorization of the contents of the first two to eight tubes. In these cases it exhibits its greatest diagnostic value.

4. The paretic curve reaction may be the only abnormality noted in a fluid.

5. The reaction in tabes dorsalis and cerebrospinal syphilis is usually marked and constant, though not so specifically characteristic as in paresis.

6. Suppurative meningitis, including tuberculous meningitis, gives a decided reaction which is usually readily distinguished from a syphilitic one.

7. The gold reaction possesses a sensitivity and differential diagnostic ability not shared by any other cerebrospinal fluid examination.

8. The value of the colloidal gold test is so great that it deserves to be termed "the fifth reaction."

We wish to express our thanks to the following Denver physicians who have kindly furnished us with many spinal fluids: Philip Hillkowitz, Edward Wm. Lazell, Benj. H. Matthews, George E. Neuhaus and S. Simon. 236 Metropolitan Building.

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News Notes

While on a visit recently to eastern clinics Dr. F. C. Buchtel was suddenly taken ill. He was sick for two weeks, but has been getting around to practice again since the middle of March.

The forty-third annual meeting of the National Conference of Charities and Correction will be held at Indianapolis, Ind., May 10 to 17. One section, that on health, will be devoted entirely to a discussion by physicians of the part the medical practitioner and surgeon may play in social work.

Dr. J. W. Thompson, who has just completed a full time residencieship at the Wills Eye Hospital, Philadelphia, and the Western Pennsylvania Hospital, Pittsburgh, has associated himself with his brother, Dr. H. M. Thompson of Pueblo, for the practice of ophthalmology.

Jewelry valued at \$1,000 was stolen from the home of Dr. C. F. Shollenberger, Denver, on March 18th. Practically all of the stolen jewels had been collected by Dr. Shollenberger and his wife in China and other foreign countries during their world tour six years ago.

The entire estate of Dr. E. C. Rivers, who was drowned at Barr Lake, 22 miles east of Denver, on October 24th, 1915, was left by a will made in 1892 to a maiden sister living in Maryland. The State Inheritance Tax Commissioner appraised the estate at \$233,934.27.

Friends of Dr. J. C. Todd of Boulder are glad to hear that his health has recovered to such an extent that he recently delivered an address before the Boulder County Medical Society.

Dr. Thomas Davis Baird of Walsenburg died at his home in that city on March 15th, after an illness of one week. Dr. Baird was borne in Mayesville, Ky., in 1853, and graduated in medicine from the Rush Medical College, Chicago, in 1877. He came to Colorado about 1880 and a little later settled at Pueblo. He had made Walsenburg his home since 1887. He was for four years a regent of the state university, and for several years a member of the State Board of Medical Examiners. At the time of his death he was mayor of Walsenburg and president of both the Huerfano county and the city boards of education. He leaves a widow and two married daughters.

A Denver dentist having sustained an extracranial hemorrhage as the result of a fall on an icy pavement at about 8:30 in the morning, and having died at 3:10 p. m. of the same day just as an operation was about to be done, a coroner's jury gave a verdict finding evidence of regrettable delay on the part of the attending physician in rendering adequate and necessary medical service.

Dr. James C. Blickensderfer, pioneer Denver physician who died lately, left an estate valued at \$200,000, which will be divided equally between his widow and only son.

Dr. W. L. Dorland, aged 65 years, died at his home in Pueblo on March 8th. For two years he had been unable to attend to his practice on account of ill health. Dr. Dorland came to Pueblo in 1887. He is survived by a widow, a son and a daughter.

Dr. L. C. Hurd died at Mercy hospital, Durango, on March 9th, after a surgical operation. Dr. Hurd was born in Nelson, Ohio, in 1857, and came to Durango in August, 1890.

Dr. H. A. LaMoore, superintendent at the State Insane Asylum at Pueblo, has won his appeal to the Supreme Court from the judgment of County Judge Rothgerber in holding him in contempt for

refusing to obey an order of the County Court to admit to the asylum patients from Denver County.

More Parliamentary Rules—An aspiring young bard contributes the following reply to the Limerick which appeared in our March news notes:

Some years ago the trick was done
By a wise King, named Solomon,
Who ruled debate on questions dense
By ac-u-men and common sense,
All wise Societies agree
In medical fraternitee,
To mix them, equal parts, and then
To take, cum Roberts, p. r. n.

The annual meeting and banquet of the Weld County Medical Society was held on March 28th. Dr. W. E. Thompson acted as toastmaster, responses being made by Dr. G. Woodcock of Greeley, Dr. H. G. Averill of Evans, and Dr. H. G. Wetherill of Denver. Among the guests were Dr. George Stemen of Denver and Dr. W. C. Burdick.

On March 17th Dr. H. G. Wetherill gave his illustrated lecture on "Glimpses of England from an Automobile" to about 150 of the professional people of Fort Morgan under the auspices of the Morgan County Medical Society. During his visit in Fort Morgan Dr. Wetherill was entertained at the home of Dr. Lockwood.

At the second medical historical dinner given by the El Paso County Medical Society, on April 1st, Dr. Gerald B. Webb gave an address on "Pasteur and Lister". The guests included Drs. W. J. Markley, C. E. Tennant, J. W. Ames, J. N. Hall, and C. E. Lyman, of Denver; T. W. Little, Canon City; W. W. Crook, Glenwood Springs; L. E. Rupert, Florence; H. A. Black, Pueblo; Thomas McIntyre, Cripple Creek; and Carbon Gillespie, Boulder.

The following physicians, serving in the National Guard of Colorado, have received promotion as stated: Lieutenant Horace B. Dodge to the rank of Captain; Privates Frederick J. Peirce, Thomas S. Long, and George H. Lee, of the Hospital Corps, to the rank of First Lieutenant in the Medical Corps.

Dr. Thomas Walker has announced his intention of giving up his position on the faculty of the medical department of the University of Colorado, and of spending a year in hospital work.

Dr. W. W. King of Cripple Creek was in Denver the early part of April.

Dr. H. A. Barclay (Denver and Gross, 1906), of Colona, visited his aged mother in Denver in the early part of April.

Dr. Frick, discoverer of the germ of Rocky Mountain spotted fever, was in Denver in the middle of March.

The obituary reference to Dr. H. B. Favill, contained in the March News Notes, erroneously located him in Pueblo instead of Chicago.

Dr. Long of Moffett, many of whose belongings were destroyed by fire some time back, has been staying for a while in Denver with his wife, whose health is not of the best, and has taken offices in the Metropolitan Building.

On March 25th Dr. H. G. Wetherill gave a reception to the members of the Clinical and Pathological Society of Denver in honor of Dr. Dean Lewis of Chicago, who addressed the society on the Function of the Hypophysis.

Dr. Thomas Walker of the medical department of the University of Colorado recently had the misfortune to lose a brother in a railroad accident in Wyoming. Dr. Walker and Dr. O. S. Fowler, having missed a train, made an exciting trip over bad roads and through stormy weather

to Casper, Wyo., where the accident had occurred, but unfortunately arrived several hours after Mr. Walker's death.

A second joint luncheon of the Denver County Medical Society with the Denver pharmacists was held on April 12th. The meeting endorsed the proposed denaturing with tartar emetic of alcohol for bathing.

Dr. Emil V. Klinkowstroem, 61 years of age, committed suicide at his home in Denver, April 2nd, by slashing with a razor a number of the large arteries of the body. Dr. Klinkowstroem had lived in Denver for thirteen years, and was a graduate of the Chicago University Medical School. He had been ill for some months.

Dr. Robert M. Marshall, formerly of Denver, was living on a ranch four miles south of Columbus, N. M., at the time of Villa's raid on Columbus. He heard the shooting and saw the fires, and his dwelling was passed by fleeing Mexicans after the fight. He went to Columbus at daylight and helped care for the wounded.

Dr. Guy Ashbaugh of Central City brought his little daughter to one of the Denver hospitals at the end of March, on account of obscure abdominal symptoms.

Dr. M. R. Fox, of Sterling, left April 1st for a six weeks' course in medicine and surgery. He will study in the hospitals of New York City.

Dr. W. J. Bingham has returned from New York City, where he spent a month studying at the

Dr. F. R. Coffman, Denver Deputy Health Commissioner, recently furnished excellent newspaper copy by the ingenious idea of appointing 200 Denver school boys as juvenile health officers for the city of Denver. The duties of the youthful officials are to keep their respective districts as clean as possible of all forms of rubbish.

Dr. Finney and Dr. Hall of La Junta have recently attained the honorable title of "grandfather," by virtue of the right bestowed upon them by their respective daughters.

Otero County Notes.

Dr. Geo. K. Angle of Silver City, N. M., has located in La Junta and will confine his practice to diseases of the eye, ear, nose and throat.

Dr. Jas. W. McLaughlin, who has been in the office of the late Dr. Kearns of La Junta, has returned to his former home in Minneapolis, Minn.

Dr. F. A. Blesse of La Junta has moved to Louisville, Ky.

Dr. R. W. Mendelson, whose home is in La Junta, has been appointed Sanitarian to the Government of Siam, and will leave in about two weeks for his new post.

Medical Societies

BOULDER COUNTY.

The Boulder County Medical Society met in the Commercial Association Rooms, Boulderado Hotel, April 6, 1916, at 7:30 p. m. A motion was made and approved that the Board of Censors be authorized to approve monthly bills, after which they may be paid and audited at the end of the year. Bills amounting in all to \$138.52 were allowed.

A letter was read from Civic Committee of the Woman's Club, stating that a visiting nurse has been employed to serve half a year, and asking that the Medical Society give dressings, etc.

Moved, seconded and carried that \$25.00 be donated for this purpose, to be expended at the discretion of the president. Moved and seconded that \$25.00 be donated to the Red Cross.

Dr. Kate Lindsay gave the paper of the evening, the subject being "Infantile Hygiene During the Pre-School Age". It was very interesting and instructive, and was discussed freely by many of the members present.

C. L. La RUE,
Secretary.

CITY AND COUNTY OF DENVER.

The meeting of the **Medical Society of the City and County of Denver**, held on March 17, 1916, was the regular business meeting. Dr. Henry Sewall presided.

The following were elected non-resident members of the Society: Joseph Wiley Craighead of Edgewater, H. C. Smiley of Ridge, Richard Russell of Westminster, Fleet H. Harrison of Fraser.

The application for membership of Dr. Martin D. Curigan was received.

The report of the Board of Trustees of the Medical Library was read by Dr. C. B. Van Zant. It emphasized the need of new equipment for the new medical library and the Society meeting hall. A committee will be appointed to raise funds for furnishing and equipping the library and hall, and to secure pledges for annual subscriptions.

A letter from the Denver branch of the American Pharmaceutical Association, dealing with the problem of satisfactory denaturing of alcohol, was read. A joint luncheon of the Denver Pharmaceutical Association and the Medical Society of the City and County of Denver was to be arranged by a committee, of which Dr. Geo. A. Moleen was chairman.

A letter from the El Paso County Medical Society was read, thanking the Denver Society and Dr. W. A. Jayne for books received.

President Sewall appointed the following committees of the Medical Society: Committee on Public Health and Legislation, J. W. Ames, D. A. Strickler, H. G. Garwood; Committee of Directors, C. N. Meader, Cuthbert Powell; Committee on Membership, H. R. McGraw, M. E. V. Fraser, A. J. Markley, R. W. Arndt, T. R. Love; Committee on Pharmacal Relations, Geo. A. Moleen, G. W. Miel, A. A. Seebass.

The Kent bill, a bill to standardize the treatment of tuberculosis in the United States, and to provide federal aid in caring for indigent tuberculous persons, was read and discussed. The Legislation Committee was ordered to draft a resolution of disapproval and to mail copies to our representatives in Congress.

Dr. Cyrus Pershing announced that on April 15, 1916, Mr. Alexander Johnson of New York would give a lecture on "The Feeble-Minded and Their Proper Management and Care."

Committees were appointed to draft resolutions on the death of Dr. Mary Hawes and Dr. J. C. Blickensderfer.

The scientific program consisted of a paper entitled "A Study of Miner's Consumption," with radiogram demonstration, by Dr. A. J. Lanza, United States Public Health Service, and Dr. S. B. Childs.

C. F. HEGNER.

The regular meeting of the **Medical Society of the City and County of Denver** was held on March 21, 1916. President Dr. Sewall in the chair.

The program consisted of a symposium on Military Surgery:

Medical Department of the United States Army—Lieut. Col. Paul F. Straub, M.C., U.S.A.

Medical Department of the National Guard of Colorado—Maj. G. P. Lingenfelter, Chief Surgeon, N.G.C.

A Consideration of a Few of the Many Lessons in Medicine and Surgery Taught by the Present European War—Lieut. Cuthbert Powell, M.R.C.

The papers were enjoyed by an unusually large attendance.

Dr. Straub emphasized the peculiar requirements of the army medical officer in addition to his humanitarian duties as a physician in civil life. He further emphasized the immediate necessity of training medical officers in the Medical Reserve Corps or in the State Militia so that in time of need a large, well-trained, efficient military medical corps would be immediately available.

The papers were discussed by Captain Leonard Hughes, M.C., U.S.A., and Drs. W. W. Grant, W. C. K. Berlin and C. E. Tennant.

C. F. HEGNER,
Reporter.

The regular meeting of the **Medical Society of the City and County of Denver** was held April 4, 1916. President Dr. Sewall in the chair.

Dr. Carmody presented a number of cases of cleft palate and hare lip which he had operated on with excellent results.

Dr. McEachern presented a case of caries of the spine in which he had performed a bone graft operation. The graft sloughed out but an excellent result was obtained notwithstanding. In the same man he excised the head of the femur for tuberculosis and nailed the femur to the ilium with good result.

Dr. Rea Proctor McGee was elected to membership.

Resolutions on the death of Dr. Rodman, ex-president of the American Medical Association, were read by Dr. Grant and adopted by the Society.

President Sewall appointed a committee consisting of Drs. Grant, Levy and Hickey, to confer with a committee of the Denver Chamber of Commerce as to a "clean-up" campaign.

Another luncheon will be held shortly with the Denver branch of the Pharmaceutical Association. Dr. Geo. Moleen is chairman of the committee of arrangements.

The scientific program consisted of the following papers:

The Influence of Low Barometric Pressures on the Circulation—Prof. E. P. Schneider, Colorado Springs.

Observations Upon the Use of Obstetrical Forceps—Arthur McGugan, M.D.

Lange's Colloidal Gold Reaction—Wm. Whitridge Williams, M.D.

C. F. HEGNER,
Reporter.

EL PASO COUNTY.

The regular monthly meeting of the **El Paso County Medical Society** was held at the Library in the Elks' Home on the evening of March 8th, 1916, at 7 p. m. Dinner was served before the business meeting, which began at 8:15 p. m. There were 49 present when Dr. Boyd, the president, called the meeting to order.

The Manitou Mineral Waters Commission reported that it had organized by electing the following officers: President, Dr. Mayhew; vice

president, Dr. Gillett; secretary, Dr. Magruder; treasurer, Dr. Bortree. The Commission is fitting up a complete laboratory and will engage a physiological chemist for the work.

The application of Dr. F. M. Shipman for membership in the Society was read and laid over until next meeting for action.

Dr. C. C. Schneider was proposed for honorary membership in the Society, and elected.

Dr. Hanford reported a case of acute appendicitis in a man operated on under nitrous oxide gas anesthesia, who five days before had had an artificial pneumothorax performed. No complication had developed.

Program: The Social Aspect of Venereal Diseases.—Dr. Mayhew.

Discussion. Drs. Rothrock, Grover, McClanahan, Depeyre, Paters, Hanford, Martin, Schneider, Bortree, Trossbach, Robinson and Boyd.

It was moved and seconded that a committee of three be appointed to take up with the Health Board of the City and County the matter of compulsory registration of venereal diseases; and with the Board of Education the matter of sex 14 to 5.

GEORGE B. GILMORE, Secretary.

FREMONT COUNTY.

The regular meeting of the **Fremont County Medical Society** was held at Florence on March 27. There was a large attendance and the gathering proved to be a very interesting one. The local physicians in attendance comprised Drs. L. E. Rupert, V. A. Hutton, R. C. Adkinson and Dr. T. A. Davis of Portland. Papers were read by Drs. Wade, Little and Wilkinson. It was decided to hold a banquet at the Strathmore hotel next month, to which the ladies will be invited. As a special feature of the program at the banquet Dr. H. G. Wetherill, of Denver, will deliver a lecture on his tour of Europe, illustrated with slides.

R. C. ADKINSON,
Secretary.

LAKE COUNTY.

At a recent meeting of the **Lake County Medical Society** the following were elected: President, Dr. B. F. Griffith; vice president, Dr. R. J. McDonald; secretary and treasurer, Dr. J. C. Strong; delegate to state meeting, Dr. F. N. Cochems. The following doctors were elected to membership: Dr. E. V. Graham, Breckenridge; Dr. C. E. Condon, Breckenridge; Dr. A. J. Bender, Salida; and Dr. A. J. O'Leary, Leadville.

J. C. STRONG, Secretary.

LARIMER COUNTY.

The **Larimer County Medical Society** met in regular session Wednesday evening, March 1, 1916, in the Y. M. C. A. Building, Fort Collins. Dr. Morris being a visitor.

Dr. Fezer presented a most interesting and instructive paper on the subject of autogenous vaccines. The general discussion which followed brought out many points of value in reference to this very important line of therapy, and those present agreed that the subject had been most ably handled by the author.

T. C. TAYLOR,
Secretary.

OTERO COUNTY.

The **Otero County Medical Society** met in regular monthly session at the residence of Dr. B. B.

Blotz, in Rocky Ford, on March 14th, 1916, at 8:30 p.m. Dr. F. W. Maier presided.

Dr. Maier presented and demonstrated a case of congenital dextrocardia in a boy of seventeen. Dr. Blotz read a paper on "The Preparation and After-Treatment of Surgical Cases", which aroused considerable discussion. Following the program, Dr. and Mrs. Blotz served an elegant dinner to the members.

R. S. JOHNSTON,
Reporter.

PUEBLO COUNTY.

The **Pueblo County Medical Society** met in regular session February 1, 1916, President C. V. Marmaduke presiding.

The paper of the evening was presented by Dr. Stoddard on "Uterine Fibroids—Diagnosis and Indications for Removal". Dr. Stoddard presented his subject in a very concise and interesting way. The discussion was very favorable.

The Society had as a visitor this evening, Dr. John Espey of Trinidad, President of the State Society. Dr. Espey made a short address to the Society, after which he was taken out by a number of the members to a small lunch.

The Secretary was instructed to send invitations to all the dentists and to the principals and nurses of the various schools to attend the next regular meeting of the Society, at which time Dr. Needles would present a paper on "Oral Hygiene".

J. H. WOODBRIDGE, Secretary.

The **Pueblo County Medical Society** met in regular session February 15, 1916, President C. V. Marmaduke presiding.

The paper of the evening was presented by Dr. J. W. Needles on "Oral Hygiene". An invitation had been extended to all the dentists of the city to attend this meeting, and also to the school nurses and principals of the various schools, of whom there were twelve present.

The paper took up the various diseases of the teeth including pyorrhea. Cavities, faulty dentition, and mal-occlusion were nicely demonstrated by quite a number of casts. The discussion was very instructive and interesting, especially that part given by the dentists.

The following Committee on Clinics was appointed: Drs. Singer, Senger, Pears, Wallace and Stoddard.

The Secretary was instructed to send the dentists of this city programs with an invitation to attend our meetings at all times.

J. H. WOODBRIDGE, Secretary.

The **Pueblo County Medical Society** was called to order in regular session March 7, 1916, by Dr. Marmaduke.

Dr. D. E. Hoag was appointed Secretary pro tempore.

The paper of the evening, on "The Puerperium and Its Complications", was read by Dr. Wm. Senger. He dwelt especially on the preventive measures before and during labor. The discussion was opened by Dr. Keeney and nearly all present participated.

On motion, the President was instructed to appoint a committee to draft resolutions of congratulations to the City Commissioners for the increasing efficiency of our City Health Department. The President appointed on the committee Drs. Wallace, Stoddard and Epler.

The Society then adjourned.

D. E. HOAG, Acting Secretary.

Book Reviews

Diseases of the Arteries Including Angina Pectoris, by Sir Clifford Allbutt, K.C.B., M.A., M.D. F.R.C.P., F.R.S., Hon.M.D., LL.D., D.Sc., etc. Regius Professor of Physics in the Univ. of Cambridge; Fellow of Gonville and Caius College; Hon. Fellow New York Academy of Medicine, etc.; 2 volumes, 1093 pages. Macmillan and Co., Ltd., London, 1915.

In recent years interest in circulatory problems has largely centered in those susceptible of elucidation, or of attempted elucidation, by the aid of various types of instruments, among which the polygraph and electrocardiograph have been preeminent. So fascinating has this study proved and so important have been the contributions to our knowledge derived from it that books and journals have been filled with tracings and electrocardiograms; the mechanical study of the circulation, experimental and clinical, has easily held chief place, and the older studies based upon painstaking collection and collation of clinical observations have largely disappeared.

Such a work as the latter now appears in the present volumes of Sir Clifford Allbutt, one trained in the elder school and eminently fitted by wide experience and careful curiosity to follow its methods. His work is in two volumes comprising nearly eleven hundred pages of rather fine print, and is unbroken by illustrations, tracing or diagram. Some idea of the exhaustive character of the work may be gained from the foregoing. He has, moreover, not only confined himself to diseases of the arteries but has devoted something over half the work to arteriosclerosis alone; aortitis of varying etiology receives comparatively brief consideration in seventy pages, while angina pectoris occupies the balance of the work. The introductory chapters on the mechanics and physics of the circulation are largely argumentative and philosophical; one could wish that the author had felt more confidence in results obtained by modern methods and more readiness to incorporate them in his discussions; though, indeed, he himself says that he has little aptitude for understanding or conducting such mechanical and mathematical investigations. A like criticism applies justly to the whole work; throughout one feels an ultra-conservative distrust of the knowledge gained from experimental physiology and a perhaps too fond reliance upon bed-side observations unchecked by experimental study. These observations are keen, however; they are extensive, covering a wide range of unusual cases, often briefly cited; they are carefully compared with others obtained from a wide knowledge of clinical literature; and, above all, they are all most critically examined. If they are sometimes made to support a greater tower of philosophical deduction than seems commensurate with their strength, it is the fault of the author's enthusiasm rather than of his clinical ability and judgment. As a presentation of modern knowledge in circulatory physiology the work is open to criticism; as a study of the clinical aspect of arteriosclerosis, aortitis, and angina pectoris it is exhaustive, careful and eminently readable. C. N. M.

Cancer of the Stomach. A Clinical Study of 921 Operatively and Pathologically Demonstrated Cases, by Frank Smithies, M.D., Gastro-Enterologist to Augustana Hospital, Chicago. With a Chapter on the Surgical Treatment of Gastric

Cancer, by Albert J. Ochsner, M. D., Professor of Clinical Surgery in the University of Illinois. Octavo of 522 pages with 106 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Cloth, \$5.50; half-morocco, \$7 net.

In these 522 pages, with 106 illustrations, Smithies and Ochsner cover the now known and accepted ground of gastric cancer in a most exhaustive and interesting manner. Much stress is placed upon the X-ray study, the gastro-intestinal function and the relation of gastric cancer to peptic ulcer.

The chapters on Morbid Anatomy, Examination of Gastro-Intestinal Function, and Significance of Gastric Ulcer with respect to Gastric Cancer are of especial interest.

Figures and percentages are put forward most minutely, but, as might be expected in a series of cases studied during the past five years, the majority are advanced to a serious degree, as there is no way at present to bring patients under observation in the pre-cancerous stage, and in many instances symptoms do not develop to the "doctoring point" until it is too late to effect a cure.

Nothing is said upon prevention. We should have read with interest even some theories advanced along this line. Today the main effort is made to secure an early diagnosis of cancer after cancer has developed. With so large a percentage of cases traceable to previous gastric ulcer, would it not be a fair problem to consider the cause and prevention of peptic ulcer, or even the "pre-ulcerous dyspepsia"?

There seems an undue tendency to look for the unusual, or the extreme conditions which assail the "poor old human frame" today, and to overlook the simpler, every-day frailties in the correction of which may lie the cure for some of the more dangerous and difficult later stages.

H. S. C.

Autoplastic Bone Surgery. By Charles Davison, M.D., F.A.C.S., Professor of Surgery and Clinical Surgery, University of Illinois College of Medicine, Surgeon to Cook County and University Hospital, Chicago; and Franklin D. Smith, M.D., Clinical Pathologist to University Hospital, Chicago. Octavo, 369 pages with 174 illustrations. Published by Lea & Febiger. Cloth, \$3.50.

In this work the authors have succeeded in presenting in clear and concise form a vast array of facts and theories covering a most important subject. They are to be congratulated on the amount of original work which must necessarily have been done in the preparation of this work. In dealing with theories, due regard is had for opinions held by other workers in this field and no attempt is made to force the conclusions arrived at by the authors.

Perhaps the most important section of the book is that which deals with non-union and its treatment by bone grafting.

The book as a whole is a most excellent presentation of the subject and includes not only the results of the author's personal experiences in clinical and experimental work, but also a thorough review of the most important literature bearing on this branch of surgery.

It would seem, however, that the same enthusiasm which led the authors to do such splendid original work has also caused them to employ and advocate bone grafting in instances in which some of the older methods would have probably answered the purpose better or at least as well. For example, what is the advantage of resorting

to the transplantation of bone in a recent simple fracture, in which a simple strand of kangaroo tendon would have secured apposition and fixation? Another illustration of the same point is shown in the technique of grafting bone into the patella. It would seem that the authors have gone out of their way for the sake of transplanting bone. It is decidedly a question as to whether bone grafting is ever necessary in fracture of the patella to secure good functional results, and the technique here given is, to say the least, "far-fetched".

However, these faults are so insignificant as to hardly deserve mention when compared with the amount of original work which has been done by the authors. The book deserves much praise and will be found of great value to those doing this kind of surgery. M. E. P.

International Clinics. A Quarterly of Illustrated Lectures and Original Articles, by Leading Members of the Medical Profession Throughout the World. Vol. I. Series 26. 1916. J. B. Lippincott Co.

This volume of the International Clinics deals with various phases of Treatment, Medicine, Neurology, Public Health, Pathology, Gynecology and Surgery. There is much that is new, a great deal that is old, some of the matter inclining to be trite. Primarily the work is presumably intended to condense into articles of a few pages the exact status of medicine and surgery as recognized by leading medical investigators.

Probably the most interesting and instructive portion of the book is the chapter by Frank A. Craig, M.D., and John Speese, M.D., dealing with "The General Review of Medicine for the Year 1915," in which the advancement made in the treatment of infectious diseases is especially mentioned.

"Combined Efforts to Annulify Surgical Shock," by George S. Foster, M.D., is well written, and is accompanied by a series of instructive plates showing the effect of shock on the cortical cells of guinea pigs.

John P. H. Murphy, M.D., writes an interesting historical sketch entitled "The Wounded Mind," in which is shown the evolutionary trend in the recognition of mind over matter.

As a whole, this volume is not so attractive as others of the series, although it contains much of value. R. H.

Venereal Diseases. A Manual for Students and Practitioners. By James R. Hayden, M.D., F.A.C.S., Professor of Urology at the College of Physicians and Surgeons, Columbia University, New York; Visiting Genito-Urinary Surgeon to Bellevue Hospital; Consulting Genito-Urinary Surgeon to St. Joseph's Hospital, Yonkers, New York. 12 mo., 365 pages, with 133 illustrations. Cloth, \$2.50 net. Lea & Febiger, Publishers, Philadelphia and New York, 1916.

The fourth edition of Hayden on Venereal Diseases is just fresh from the publishers in a very much improved, well-bound volume, with many very good illustrations, and much new and up-to-date text on the subject.

It considers gonorrhea and its complications in a lucid form in nine chapters, giving the modern methods of treatment. It also treats of other venereal conditions along lines that have proven most successful to the experienced practitioner.

In a comprehensive way the author considers syphilis in eighteen chapters, giving without unnecessary volume about all the important recent

knowledge in clinical aspects and modern treatment to date.

This book will be found of value to the student and the general practitioner as well. W. H. D.

The Clinics of John E. Murphy, M.D., at Mercy Hospital, Chicago. Volume V, Number 1 (February, 1916). Octavo of 194 pages, 33 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Published Bi-Monthly. Price per year: Paper, \$8.00. Cloth, \$12.00.

Of the twenty-four subjects demonstrated in this number, thirteen relate to various hip and knee-joint conditions; many excellent differential diagnoses are given, and the subject of arthroplasty is again thoroughly reviewed.

In his treatment of hip tuberculosis, Murphy is radically different from most orthopedists in that he injects at once an antiseptic solution of formalin, creosote, guaiacol and iodoform in glycerine, which injection he repeats two or three times. He will not countenance any form of brace or plaster cast but relies alone on traction applied to the limb in bed. In the other type of joint lesion, the metastatic pyogenic infection, in addition to traction he aspirates before injecting.

Murphy's "Talk on Certain Injuries Within and About the Knee-Joint" is taken for the most part from Kocher and Robert Jones, and makes clearer a rather difficult differential diagnosis.

R. G. P.

Sexual Impotence. By Victor G. Vecki, M. D., Consulting Genito-Urinary Surgeon to the Mt. Zion Hospital, San Francisco. Fifth edition, enlarged. 12mo of 405 pages. Philadelphia and London: W. B. Saunders Company, 1915. Cloth, \$2.25 net.

This book was reviewed here in its fourth edition. There is nothing to be added to what was said there except congratulations to the author on its success and the advance made in this branch of medicine. As far as a critical review is concerned, we need only say that this book is even more valuable than its predecessors, owing to numerous emendations, additions and revisions. It is pleasing to note the omission of many references and much discussion of the views of other writers. The author is not in accord with the resolutions passed by different well-meaning societies, declaring absolute sexual continence to be not injurious. Vecki believes that the great majority of such individuals are naturally possessed of a low degree of sexual power. The book is a clever handling of a topic fraught with danger, and does not play to a pornographic gallery. O. L.

Social Travesties and What They Cost. By A. T. Atkinson, M.B. Vail Ballou Company, N. Y.

If enthusiasm for and interest in the cause were sole criteria, this little book might be considered an important contribution to the forces arrayed against vice and the diseases inevitably associated with it. But we have learned so much recently about the ineffectiveness of the unprepared and the untrained warrior that one cannot escape the thought that even in the case of literary weapons untrained aid may rather deter than assist. The economic effect upon the human race of venereal disease is a subject too stupendous for the "dilettante" student of morals, whose rambling style, whose frequent misspelling of well-known names, and whose failure to give accurate references distract so often from the subject in hand that the purpose is almost wholly lost. A. J. M.



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The United States Civil Service Commission announces an open competitive examination for Chief Statistician for Vital Statistics, for men only. Salary of \$3,000 a year. The Chief Statistician for Vital Statistics is the administrative and statistical head and has full charge of the work of the Division of Vital Statistics. Competitors will be rated on the following subjects: Practical tests in statistics; thesis; education; experience. Prerequisites for this position are: Graduation from a recognized medical school and at least four years' experience in charge of the vital statistics of a city or a state or in a position of similar importance.

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Vice Presidents, 1st, C. E. Tennant, Denver; 2nd, J. U. Sickenberger, Grand Junction; 3rd, W. A. Kickland, Fort Collins; 4th, H. W. Averill, Evans.

Secretary, Crum Epler, Pope Block, Pueblo.

Treasurer, W. A. Sedwick, Metropolitan Building, Denver.

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Term Expires, 1916—H. R. McGraw, Denver; Alternate, F. R. Spencer, Boulder. 1917—L. H. McKinnie, Colorado Springs; Alternate, George A. Moleen, Denver.

COMMITTEES FOR 1915-16.

Scientific Work, H. A. Black, Pueblo; W. A. Jayne, Denver; Crum Epler, Pueblo; W. H. Crisp, Denver.

Credentials, Crum Epler, Pueblo; W. H. Halley, Rouse; George A. Moleen, Denver.

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Publication, A. J. Markley, Denver, Chairman (1916); L. B. Lockard, Denver (1917); Melville Black, Denver (1918).

Auditing, O. M. Gilbert, Boulder; H. A. Garwood, Denver; E. L. Rupert, Florence.

Necrology, C. A. Ringle, Greeley; J. B. Davis, Denver; H. Goodloe, Canon City.

Medical Education, Frost C. Buchtel (1916); Will H. Swan, Colorado Springs (1917); George H. Cattermole, Boulder (1918).

Health and Public Instruction, R. W. Corwin, Pueblo; W. T. Little, Canon City; H. A. Smith, Delta.

Committee to Cooperate with State Pharmacal Association, C. E. Edson, Denver; J. C. Chipman, Sterling; E. D. Burkhard, Delagua.

Committee of Arrangements for 1916 Meeting, W. W. Crook, W. W. Frank, and J. P. Riddile, Glenwood Springs.

Committee to Revise By-Laws, W. A. Jayne, Denver; L. H. McKinnie, Colorado Springs; H. A. Black, Pueblo.

Workmen's Compensation Acts, H. R. McGraw, Denver; S. D. Van Meter, Denver; D. P. Mayhew, Colorado Springs.

First Aid, Aubrey H. Williams, Denver; F. H. McNaught, Denver; C. B. Lyman, Denver.

Study and Control of Cancer, T. A. Stoddard, Pueblo; J. G. Hughes, Greeley; T. M. Burns, Denver.

Medical Defense, H. G. Wetherill, Denver; M. J. Keeney, Pueblo; Crum Epler, Pueblo.

Constituent Societies and Times of Meeting and Secretaries.

Bent County, first Tuesday of each month; P. A. Leedham, Las Animas.

Boulder County, every Thursday; C. L. La Rue, Boulder.

Crowley County, second Tuesday of each month; E. O. McCleary, Ordway.

Delta County, last Friday of each month; W. Scott Cleland, Delta.

Denver County, first and third Tuesday of each month; H. R. Stilwell, Denver.

El Paso County, second Wednesday of each month; G. B. Gilmore, Colorado City.

Fremont County, fourth Monday of January, March, May, July, September and November; R. C. Adkinson, Florence.

Garfield County, second Thursday of each month; W. W. Frank, Glenwood Springs.

Huerfano County, P. G. Mathews, Walsenburg.

Lake County, first and third Thursday of each month; E. A. Whitmore, Leadville.

Larimer County, first Wednesday of each month; C. C. Taylor, Fort Collins.

Las Animas County, first Friday of each month; A. J. Chisholm, Trinidad.

Mesa County, first Tuesday of each month; R. B. Harrington, Grand Junction.

Montrose County, first Thursday of each month; S. H. Bell, Montrose.

Morgan County, E. E. Evans, Fort Morgan.

Northeast Colorado; N. Eugenia Barney, Sterling.

Otero County, second Tuesday of each month; R. S. Johnson, La Junta.

Prowers County, first Tuesday of each quarter. F. Milton Friend, Lamar.

Pueblo County, first and third Tuesday of each month; J. H. Woodbridge, Pueblo.

Routt County; H. C. Dodge, Steamboat Springs.

San Juan County; F. W. E. Henkle, Silverton.

San Luis Valley; L. L. Herriman, Alamosa.

Teller County; Thos. A. McIntyre, Cripple Creek.

Tri-County; C. W. Merrill, Burlington.

Weld County, first Monday of each month; J. W. Lehan, Greeley.

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COLORADO MEDICINE

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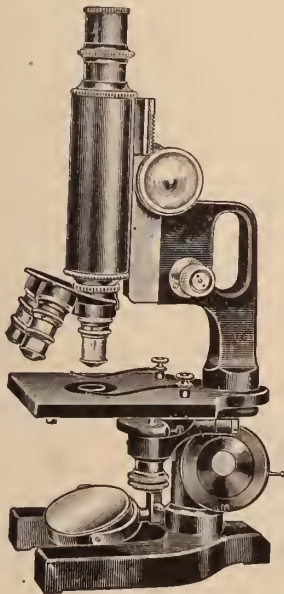
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Editorial Comment

THE COLORADO STATE BOARD OF HEALTH.

In the April issue of Colorado Medicine, reference was made to a survey of State Boards of Health recently accomplished by Dr. Charles B. Chapin, Commissioner of Health at Providence, R. I., on behalf of the Council on Health and Public Instruction of the American Medical Association. It was, of course, inevitable that by the date of publication of Dr. Chapin's report some of the facts stated should already be out of date. This is especially the case in Colorado, where the personnel of the State Board of Health has undergone a decided change since the time of Dr. Chapin's visit.

The annual bulletin of the Colorado State Board of Health, recently published, is an excellent testimonial to the sincere and earnest work which is being done by the present board, with the very able and energetic assistance of its secretary, Dr. S. R. McKelvey. The present report, a volume of 233 pages, contains a new set of rules and regulations adopted as lately as February 7th, 1916, and covering 84 pages of the report. Another important feature of the publication is a complete recitation of the public health laws of Colorado, 119 pages in length. The original law of 1893, establishing the State Board of Health, gave the board very broad powers. "The State Board of Health shall have general supervision of the interests of health and life of the citizens of this state." Unfortunately, as is very properly emphasized in the annual report of the secretary of the board to Governor Carlson, the financial al-

lowance made has hardly been commensurate with the powers and responsibilities conferred. Dr. McKelvey says: "If the state would make the necessary financial provisions for operating the health laws that we have, the efficiency of this board could and would be quickly raised to a standard equal to that which prevails in most of the states." Dr. McKelvey optimistically regards nearly all legislators as honorable men, and he is probably correct in believing that "When they fail to make proper arrangements for the protection of health and the lives of the people it is because they do not understand matters of this kind."

The board hopes that the systematic rules and regulations now compiled will be of particular benefit to local health officers, in so far as they are applicable to local conditions. In regulation 61, under the heading "Division of Bacteriology" have been included regulations providing for examination by the State Board of Health of diphtheria swabs, tuberculous sputum, typhoid blood, pus smears for gonococci, smears in suspected syphilis, Wassermann reaction, suspected spinal fluid for the meningococcus and suspected rabies. The care with which these regulations have been elaborated, and their inclusion in this report, speaks well not only for the industry and intentions of the board, but also for the buoyancy of their faith in the generosity of future legislatures; for in a special notice at the beginning of these bacteriological regulations we read that "On account of the small laboratory funds available, the Colorado State Board of Health can at present make bacteriological examinations only" of swabs for suspected diphtheria, of spinal fluid for the meningococcus and of the central nervous system of animals

in suspected rabies. We shall all hope that the board is right in its belief "that the legislature which will convene in January, 1917, will make the necessary appropriations to enable this department to handle the bacteriological work completely."

Two other matters calling for special mention are the successful activity of the board in condemning and destroying large quantities of adulterated impure food which would formerly have been disposed of in the open market; and the attention which the board is giving to the important question of protection of the watersheds of the state against pollution, particularly on the part of the tourists and campers who are visiting our mountain scenery in constantly increasing numbers.

OUR EDUCATIONAL STANDARDS.

It is doubtful whether many of us adequately realize the rapidity with which the standards of medical education have been changing in the United States. In the course of twelve or fifteen years, the former medical training of two or three years' duration has been converted into what is virtually a six or seven years' course, and the average efficiency of medical teaching has probably been increased fully in proportion with its lengthened duration.

In 1904 (Colwell, American Medical Association Bulletin, vol. 11, No. 3) there were 166 separate institutions for medical education in the United States; although the rest of the world contained only 154. "No more than a score of these institutions were well conducted or even fairly well equipped; a large majority were owned by individuals or joint stock corporations and conducted for profit." From 1904 to 1915 the number of medical graduates in the United States dropped from 5,747 to 3,536. We are told that 50 or 60 of the better medical colleges could easily have cared for all the students enrolled in the 102 which were active during 1914-1915; and this without any further expense for teachers or equipment.

Bevan (*loc. cit.*) expresses the opinion that to require a college degree for admission to the medical school is not essentially a higher

standard than the present rather usual plan of a combined six years' course, with a preliminary two years in the university in which special attention is given to physics, chemistry, biology and modern languages; but that those who advocate the college degree as a preliminary requirement fail to appreciate not only the proper relationship between general and medical education, but also the importance of the time element in planning a technical education. The standard of medical education that is already largely accepted, and which will probably in the near future be the legal standard throughout the United States, is already one year longer than the ideal which the Council on Medical Education of the American Medical Association set before itself and the association in 1904; for in the report made by the council at that time this standard was laid down as being: "After a four year high school course one year of physics, chemistry and biology; a four year medical course; and one year as a hospital intern."

It appears that there are still in this country about twenty medical schools which are unsound and inefficient. It will probably not be long before pressure by the state examining boards will have eliminated these undesirable schools from the medical education of the country. On the other hand, Bevan does not hesitate to declare that "a careful analysis of the medical schools of this country and those of Europe shows clearly that today an undergraduate student can obtain in at least a dozen of our medical schools a better medical education than he can in Europe—to be more specific, than he can in Germany, England, France, or Austria". The hospital internship in this country is characterized as affording a more valuable training than the required hospital year in Germany, or the plan of house physicians and surgeons in England.

As an important detail of reorganization for the future, Bevan proposes the coordination of all the medical teaching institutions in each large center, so that in any such center all the medical students may face the same requirements and enjoy equal educational advantages. Another and somewhat less agreeable problem facing medical edu-

eators of this country is that of obtaining fair treatment for their graduates at the hands of two Canadian provinces—Quebec and Ontario. Graduates from even the very best medical schools in this country cannot be licensed to practice in either province without first taking an additional year's work in one of the medical schools of those two provinces, and this in spite of the fact that the preliminary requirements for medical education in Canada are barely equal to those of a large proportion of medical colleges of the United States. Bevan does not scruple to suggest that if a friendly adjustment cannot be made, it will be entirely proper to exclude Canadian graduates from the United States until this injustice is removed.

A CANCER JOURNAL.

The popular maxims that "where there's a will there's a way" and "necessity is the mother of invention" neatly express the truth, of supreme importance in human affairs, that the fundamental factor in overcoming difficulties is not to regard those difficulties as insuperable, but to concentrate all one's mental powers on their solution. This has been exemplified in many of the departments of scientific research and notably as to many of the problems of disease. The importance of cancer as a boding terror in human life is familiar to all of us; but the common mental attitude on the subject is rather too generally one of tragic hopelessness. If a remedy or remedies, outside surgery, for this terrible disease or group of diseases is ever to be found, it will probably be reached when a sufficient number of capable and persistent minds have determined that a solution is humanly possible and have devoted their scientific knowledge and best energies to attaining the goal.

An interesting sign that the human race, through its scientific experts, has made up its mind that the problems of the cause and cure of cancer can and must be solved, presents itself in the form of the new "Journal of Cancer Research", which made its introductory bow to the scientific and medical

public this year. This periodical, a quarterly published in America and England for the editorial committee of the American Association for Cancer Research, under the editorship of Richard Weil, supported by Bloodgood, Loeb, Tyzzer, Wells, and Woglom, is, as might be expected, a highly technical publication devoted to the elaborate detail of research work. The April issue contains a paper by Tyzzer on tumor immunity, one by Bell and Henrici on renal tumors in the rabbit, one by Lambert on tissue cultures in the investigation of cancer, one by Marsh and Von Willer on thyroid tumors in the sea bass, one by Gaylord on so-called carcinoma of the thyroid in fish, one by Calkins on the effects of cancer tissue and of normal epithelium on the vitality of protozoa, one by Benedict on the effect of phlorhizin on tumors in animals, and one by Smith on the crown gall of plants and its relation to human cancer. The tumors of plants concerning which Smith writes are due to a specific microorganism "which has no power to kill the cells, but only the power to set them growing". As to the cause of animal cancers, "nothing is yet definitely proved beyond the very iconoclastic and suggestive fact brought out in recent years by Rous of the Rockefeller Institute, that sarcoma in fowls is due to a filterable virus, i. e., to something, separable from the cell itself, which can persist after the death of the cell."

Of special interest in Smith's personal investigations is the fact "that by means of inoculation with the same microorganism different types of tumors varying in structure, according to the type of tissue invaded, can be produced".

THE NEW QUARTERS FOR THE DENVER MEDICAL LIBRARY.

The rehousing of the library of the Medical Society of the City and County of Denver in the new quarters shortly to be erected next to the Metropolitan Building on Court Place, together with the adequate furnishing of the new medical meeting hall to be provided in the same structure, will involve a considerable expenditure of money, esti-

mated by the trustees at in the neighborhood of \$4,000. Some thousands of volumes now preserved at the Denver Public Library will be housed in the new premises, as will also not only the books now kept on the open shelves in the present quarters, but a further goodly number of magazines and bound volumes now hidden away in the basement of the Metropolitan Building. It will be necessary to provide new stacks not only for much of this material, but also for the future needs of the library in its rapid growth from year to year.

To provide the funds, Dr. Henry Sewall, president of the Denver society, recently appointed a committee of forty members, under the chairmanship of Dr. Edward Jackson. At a lunch meeting of this committee, it was decided to conduct a rapid campaign in the week from May 20th to 27th, dividing the committee into five teams under the captaincy of Drs. Melville Black, A. J. Markley, Cuthbert Powell, A. S. Tausig, and O. M. Shere. Dr. W. A. Jayne was appointed treasurer of the committee.

Original Articles

SOME POINTS IN EYE DISEASES FOR THE GENERAL PRACTITIONER.*

F. E. WALLACE, M. D., PUEBLO.

It is wise, as colleagues, for the general practitioner and the specialist to have an occasional heart-to-heart talk.

At this time I desire this talk: first, because some evils have crept into our ranks: second, for the reason that emphasis placed on some important signs and symptoms may aid in diagnosis of the common eye diseases.

Increased facilities for teaching and the larger number of cases coming into the clinics, at the present day, have added greatly to the knowledge of ophthalmology possessed by the general practitioner.

It is no uncommon thing to have cases referred to the ophthalmologist by the general practitioner, because he recognizes con-

ditions which may result in serious complications and because he does not desire to treat them.

On the other hand, it is quite a common thing to have patients come for treatment because the disease or condition which is being treated by the family doctor does not improve.

Many cases come too late, with the result that defective vision is acquired, blindness is produced, and eyes are lost or ocular affections are unrelieved.

Of late, some men have advised the general practitioner to add refraction to his work. This advice I consider most pernicious.

In most cases of refraction, if carefully done, it takes very good judgment on the part of the oculist to adjust the correct lens. I have seen most serious results because of myopic lenses having been placed before hyperopic eyes. This has been done time and time again by both the refracting practitioner and the optician. Refraction and muscular imbalances are difficult problems and their correction should not be undertaken by any but a skilled oculist. The general practitioner cannot do this special work and do it aright. His time will be fully occupied, if he will make a study of the newer methods of diagnosis, blood examination, blood pressure, serum therapy, immunization, etc. These will repay him financially much better than attempting to do refraction or treating cases along special lines, unless he expects to take up the special work.

Diagnosis is our sheet anchor and the welfare of our patient should be our first consideration.

Robert T. Morris says in "Tomorrow's Topics", "If one lives in some part of the world in which experts are not available in any special subject, then he has the moral right to do that sort of work himself, otherwise not".

Hubbard says many physicians will advise their patients to consult the optician, whom they recommend as competent and trustworthy, and furthermore, that these physicians aid in bringing into legal existence this aggressive layman, and that "they

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

even serve on so-called boards of examiners for this misnamed profession of optometrists and assist them in the fraudulent work of diploma mills". He declares these physicians are used to cloak a perilous ignorance of ocular physiology and optics and that the whole business from beginning to end is a prostitution of a part of medical science to low commercial ideals of trade.

He states that "for the encroachment on legitimate medicine and the unfortunate results which follow, the medical profession are largely responsible, through fostering and propagating the sentiment that the optician can properly and without danger perform this work". The ophthalmologist does not refer his patients to a druggist for treatment, so why should the general practitioner refer his case to an optician?

The next part of this paper, dealing with diagnosis, is intended primarily for those who, being located some distance from special men, must of necessity render first aid.

We will first consider some of the commoner diseases of the lids.

Blepharitis, a common, chronic, inflammatory condition of the lid margins, may progress to the point of destroying the hair follicles and producing thickened, scarred lid edges. Redness and scales may be the only sign, but crusts, swelling and ulcerations may also occur. Errors of refraction produce the first irritation and upon this initial inflammation are engrafted the ordinary infective organisms.

A sty, or hordeolum, may be a slight affair and easy of diagnosis. However, it is sometimes hidden and will produce alarming symptoms, from cellulitis. We must differentiate it from cellulitis of the orbit, frontal sinus disease, insect bites, poisoning, chlamydia, etc.

Chalazion is an enlargement of the Meibomian gland in consequence of the stoppage of its duct, while a sty is an infection of the hair follicle. The former presents a hard tumor in the lid substance, generally without much redness or tenderness, while a sty causes considerable pain, redness and a point of pus. Chalazion may be present for months. Surgery will quickly dispel either.

Entropion, a condition in which the lid edges turn inward, and **ectropion**, in which they turn outward, are due to various serious causes and need only to be mentioned to explain that both lead eventually to serious troubles, because of their effect on the cornea. Both conditions are the results of disease or injury. The treatment is surgical.

Herpes zoster of the lids is not a common disease and yet I believe easily recognized especially if a large area is involved. The characteristic symptoms and eruption are present. At times, it becomes serious, especially when the process extends onto the eyeball.

Pterygium is a thickened fold of conjunctiva, with its apex or head on the cornea and its body and base spread out like a fan, toward the canthus. It may advance and cover the pupil, and in this case the vision is permanently interfered with. This external growth is sometimes diagnosed as cataract. Its treatment is surgical.

Lachrymal affections are sometimes attended by serious complications. Obstruction at any point in the canal, duct or sac will finally lead to infection, with consequent pus formation. If the collection be in the sac and there is no outlet, we get an abscess which shows at the inner side of the eye on the nasal wall. The case then demands surgery, not only in opening the abscess but frequently in extirpating the sac. Before the case arrives at this stage, proper treatment of causative factors may bring relief and cure. In the majority of cases, the cause is to be found in the nasal cavity, where the outlet is closed because of swollen tissues.

Red Eyes. Here is a patient with a red eye. What can it be? One of many conditions.

As redness is the most obvious sign of conjunctivitis, we are too apt to confound redness of the globe with redness of the conjunctiva, that is to say, to diagnose an inflammation of the lining membrane, of no great importance, whenever we meet with redness of the eye.

You must beware, however, of this diagnosis of conjunctivitis, which is a sort of refuge for the destitute. Too carelessly arrived

at, this diagnosis may lead us to overlook more deeply seated and dangerous forms of inflammation.

As a matter of fact, the eye is more or less red in all cases of disease of the anterior segment.

Here within a limited area are histological layers varying greatly in importance and resistance. Inflammatory congestion is rarely limited to any one of them, hence the difficulty of making out the principal seat of the mischief.

In other words, conjunctivitis, keratitis, iritis and glaucoma, all common diseases but of unequal gravity, are manifested by this sign common to all, viz., redness of the ocular globe.

In rare instances we meet with violet patches, indicating inflammation of the fibrous coat of the eye—scleritis or episcleritis.

Lastly an ecchymosis, a subconjunctival effusion of blood, gives rise to a particularly vivid, more or less extensive, redness.

Still further to complicate matters, the conjunctiva when irritated by treatment is very apt to share in the inflammation of more deeply seated structures.

It follows that this redness is a symptom by no means easy of interpretation. Nevertheless, if we take the trouble to analyse and examine with care the various types of redness and the association of redness with other symptoms in the different diseases of the anterior segment, we can arrive at a correct diagnosis.

The conjunctiva is a mucous membrane, and an inflamed mucous membrane is not only red but it secretes. By pulling down the lower lid and everting the conjunctival cul-de-sac, we shall see whether or not there is any secretion (threads of fibrin, mucus or glairy matter). If the red eye secretes, there is conjunctivitis, but are we dealing purely and simply with conjunctivitis; and what particular form of conjunctivitis?

If you look closely into the matter, you will see that there is another sort of redness, the pericorneal, ciliary redness which indicates the existence of more deeply seated inflammation and is present in grave af-

fections of the anterior segment, viz., keratitis, iritis and glaucoma.

How, then, are we to distinguish between conjunctival redness and ciliary redness? If there be a violet or even a pinkish circle made up of tiny vessels round about the cornea, the injection is sub-conjunctival and suggests deep ciliary infection.

With a finger placed on the lower lid, try to slip the conjunctiva over the globe. If the vessels move, they are in the conjunctiva; if they remain stationary, they belong to a deeper plane.

Do not let us forget, however, that this examination is only to serve as a guide, because the conjunctiva often reddens owing to contiguity.

Look for the violet, deeply seated, finely radiating pericorneal circle. Its presence is a sign of the greatest importance, because it indicates something more than ordinary conjunctivitis. It is a sign which will enable you to differentiate the various affections.

In inflammation of the cornea (keratitis) the symptoms in general consist of inflammation, vascularization and circumcorneal injection, with the conjunctiva or deeper structure involved. Deep keratitis consists of a cellular infiltration of the middle and posterior layers of the cornea, of frequent occurrence in childhood, chronic in its course and not leading to ulceration, but accompanied by more or less inflammation of the uveal tract. The great majority of the cases are due to inherited syphilis, a few to acquired, to tuberculosis, etc. If other signs of these diseases are to be found, the diagnosis is easily made.

A better knowledge of internal medicine and pathology has taught us the wisdom of regarding many forms of keratitis as a local expression of a generally lessened power of resistance.

In keratitis, photophobia and lachrymation are well marked. Oblique illumination may reveal the existence of ulcers, of irregularities or opacities which modify the normal glint.

Ulcer of the cornea consists of an infiltration, and begins with a dull, grayish or yellow-gray spot. Suppuration takes place, the superficial layers are cast off, and there is

consequent loss of substance. It may go deep or spread laterally. There are several clinical forms, which I do not need to dwell upon. Ulcers of the cornea are very amenable to proper and energetic treatment, provided they come early, hence in general afford a favorable prognosis.

In **iritis** we get much the same functional disturbances, but in this case oblique illumination reveals no lesion of the cornea, the pupil is smaller and is irregular in outline and the eye is painful. Atropine is indicated.

In **glaucoma** the redness is more diffuse, the cornea is steamy, the pupil is moderately dilated, and the eye is hard. Irreparable blindness may ensue in twenty-four hours. from an attack of fulminant glaucoma. Atropine is contraindicated.

Do not use atropine indiscriminately, even in wounds of the eye. It is safe to use in children and young adults, but very unsafe in older adults, unless you know the exact indications for its use.

In the conditions mentioned, the patient cannot read or can do so with difficulty.

The prognosis is, of course, very different as between conjunctivitis, which only becomes serious by reason of possible complications, and affections of the anterior segment which involve organs essential to vision. The prognosis, for that matter, depends largely on the institution of early and active treatment.

Acute blennorrhoea or ophthalmia neonatorum remains yet the most potent cause of blindness, in spite of our knowledge of treatment and prophylaxis. The symptoms are known to us all, and yet do we always act according to our knowledge?

Fox says: "It is good judgment to suspect gonorrheal infection in every case of conjunctivitis in the newborn, and from a standpoint of prophylaxis to consider every ante-partum abnormal vaginal discharge as suspicious."

"Do not let bacteriological refinements cause you to temporize in the treatment. It is true that every conjunctival discharge of the eyes of the newborn does not contain the gonococcus; nor is every membrane

diphtheritic. Neither should wait for the microscope."

Trachoma or granulated lids is a very important affection on account of its disastrous complications and sequelae, which are responsible for so many cases of partial or total blindness. It is important to us in this discussion because of its oftentime being confused with simple conjunctivitis.

It is an inflammation, generally of lengthy duration, accompanied by hypertrophy of the conjunctiva and the formation of granules with, ordinarily, subsequent cicatricial changes. It is a common disease and occurs at all ages. There is more or less secretion, which is contagious.

The diagnosis of trachoma demands, first, that the diagnostician be familiar with the appearance of the normal eye, and second, that a complete and thorough examination be made.

Pannus is one of the complications. A vascular condition arises which is nothing more or less than the extension of the trachoma to the cornea.

I cannot close without making a plea for the cross-eyed child. Physicians have so many opportunities for making suggestions to parents bearing on the welfare of their children, that I wish to emphasize that no opportunity is more urgent and no advice, if heeded, is fraught with such blessings to the cross-eyed child as the advice that he or she must be fitted with glasses by the oculist.

Many children are doomed to go through life stigmatized as mentally defective, must be satisfied with menial positions, and will never see many of the beauties of the world, because of defective vision. It is the defect which causes the squint. In most cases the vision can be developed or saved. It deteriorates unless used. When developed and used, the eye will remain straight because it has learned to focus. No child, when the squint is discovered, is too young to have the proper correction placed before the eye.

DISCUSSION.

Melville Black, Denver: Ectropium of the eyelids in people who spend a good deal of time out of doors is a thing we not uncommonly see in this country. Oftentimes a stitch in time will save these individuals a lot of discomfort in the future. This eversion of the lower lid is due to exposure to weather in individuals who have a very sensi-

tive skin. They are almost always of a light or sandy complexion, and the skin oftentimes becomes taut and stretched, so much so that it everts the lower lid. This can be overcome by causing these people to massage their faces every night with cold cream or other grease. The massage should be directed toward the inner corner of the eye, and these people should be directed to wipe the eye towards the nose, in order to avoid tilting the lid forward and displacing the punctum, with the accompanying lacerimation and discomfort which exaggerates the conditions which bring about this ectropium.

Pterygium is another condition that the general practitioner can do a great deal for if seen early. As the author of the paper says, these people should consult the family practitioner and they can be told that a pterygium is forming, and they should guard against exposure of the eyes to wind and dirt. On a windy day they should wear proper protecting glasses. These pterygia are caused by irritation of the eye from dirt and wind and dust, and if the eyes are protected against these things many of these pterygia can be completely stopped, while others may go on and reach a sericus form.

It seems to me that one of the most important symptoms in the differential diagnosis between the various inflammatory conditions of the eye which are manifested by redness is that of sticking together of the lids in the morning. This is a pathognomonic symptom of conjunctivitis, and where present is of great diagnostic importance. Of course, we may have conjunctivitis, iritis and glaucoma all in one case, but this is not likely if you have an eye-lid gummed up and stuck together a large part of the time, and when a patient has such a condition on awakening in the morning it is a certain diagnosis of conjunctivitis.

William H. Crisp, Denver: I am not one of those who believe that the general practitioner should leave the eye entirely alone. I think that this course of action very often results disastrously to patients who are at a distance from a specialist.

Of course, the diagnosis is the basis of all treatment in the eye as in other parts of the body, and there are several elementary matters with regard to the diagnosis with which the general practitioner ought to be fairly familiar. The first of these, which is the simplest and cheapest in his equipment, and one that does not take much trouble to master, is the test card, a card of test type. Every general practitioner should at least know how to use his card in discovering a patient's visual acuity. He should know what is normal vision, allowing for the distance he is able to work at, and should be able to check up the patient's vision from day to day if he is attempting to handle the case. Many patients go to see the general practitioner in the country, and it would often be rash on the part of the general practitioner to send the patient at once to a specialist in a distant city; but if the general practitioner undertakes to handle cases and has made a test of the visual acuity on the first day, and makes that test again from day to day, he may feel at least fairly safe if the visual acuity remains the same or is not getting worse from day to day. In cases not of an acute character, it often happens that the patient's vision gets worse, and that is an important indication. It is not hard to master the use of the test card, and every general practitioner ought to do so.

Another detail of diagnostic technique which is really simple and easy to master is the use of

indirect illumination. This consists in throwing a relatively strong light from one side upon the front of the patient's eye. It may be done merely by the use of a strong source of light rather close to the patient's eye, but is commonly more effective when the light is focused upon the eye by means of a strong or magnifying convex lens. A very convenient form of lateral illumination for use either in the office or home is a good pocket flash-light. In this way many details are brought into much sharper relief than with ordinary diffuse light; for example, a very small foreign body on the cornea, a delicate ulcer or infiltration, slight irregularities or opacities, or the presence of adhesions or other abnormal conditions in the pupil or iris.

It is not perhaps too much to hope or even to demand that some day every medical graduate shall be required to be able to make at least a superficial ophthalmoscopic examination of the eye ground. For some years past, in his teaching work in the medical department of the University of Colorado, Dr. Edward Jackson has found it possible to teach every senior student to see the details of the normal ocular fundus by his own individual effort. Those who have seen the work of these men after graduation will, I believe, bear me out in saying that cases of eye disease coming to them have been dealt with much more intelligently, either by personal treatment, or by timely reference to the specialist, than is the case with the average general physician.

George F. Libby, Denver: I want to make an addition to Dr. Wallace's excellent, although necessarily incomplete paper (necessarily incomplete because of the limited time at his disposal), and that is in regard to the differential diagnosis between conjunctivitis and iritis. We read a good deal about differentiating them by the brick red color of the conjunctiva on the one hand, indicating conjunctivitis, and on the other hand, the red pericorneal injection, indicating iritis. There is only one differential diagnostic point that is essential and sure, and that is the condition of the pupil. If you are not at all sure of the reflex of the pupil, as shown by throwing in a bright light or turning the eye towards the dark, if you instill a drop of homatropin or cocaine solution, you will not only find whether the pupil is mobile or not, but you will also find whether or not there are any adhesions. Iritis is an inflammatory condition of the iris, with more or less exudate. Therefore, if you have iritis you will have a pupil that is not freely mobile; and the use of a mydriatic in a small pupil or pupil of ordinary size will tell you whether or not the pupil is mobile, and also whether or not there are any adhesions. If there are any adhesions a mydriatic should be continued until they are broken up. I think that the mobility or otherwise of the pupil is the essential point in the diagnosis of iritis. Every oculist will tell you that he has been surprised again and again by finding adhesions between the iris and the lens capsule when there was reasonable doubt as to whether there was anything the matter at all.

James J. Pattee, Pueblo: Another frequent condition, which is easy for the general practitioner to detect and which is very dependable, is gumminess of the lids, which generally exists in conjunctivitis, but almost never in iritis and other inflammations of the deeper structures.

Photophobia or dread of light is nearly always a strong indication of inflammation of the cornea, iris or ciliary body, but it does not exist to any marked degree in conjunctivitis.

I wish to emphasize the doctor's warning about cross-eye. Cross-eye can be cured with glasses in 70 or 80 per cent of cases if properly treated before 6 years of age. If not treated, one eye becomes blind for practical use at 10 or 12 years of age. The only sure way to prevent blindness and straighten the eye is by glasses at 2, 3, 4 or 5 years of age. Every child from 3 to 6 who has cross-eye is a candidate for the loss of an eye if not fitted with glasses before he is 6 years of age; it is best to order glasses as soon as the eyes cross.

O. M. Gilbert, Boulder: From the standpoint of an internist, I am a firm believer in the cooperation of the specialist with the general medical man, and there are some points in that cooperation I wish to discuss. We have not gotten together in the diagnosis of general diseases as we should have done. Let us take, for instance, dizziness. We have cases of dizziness in which we are not certain as to the cause. We cannot find anything in our examination sufficient to account for it. There may be a little albumen or indican in the urine which may account for it, but we are not quite satisfied. The blood pressure may be high. We want the head men, the eye, ear, nose and throat men to help us out in these cases. I say to some of my professional friends, we do not primarily send this patient to you for examination of the eyes, nose or ears; the trouble may be due to one of these, but we send the patient to you primarily to find out if there is anything in your line to account for the condition. Too often our specialists have not seen that point of view and do not agree with us. Without going into a complete examination of these cases, or without going into the history of the cases sufficiently to see if the trouble is probably due to this or that condition, it is impossible to make an accurate diagnosis. If a thorough examination is made and specialists will cooperate with us, I am sure much can be done which is valuable to both of us.

F. E. Wallace, Denver (closing): The object of my paper was to urge upon the medical man the importance of knowing the condition which he is going to treat. As Dr. Black has said, there are some cases that the general practitioner should treat, but he should not treat a case when he knows that he is incompetent to do so.

I want to emphasize what Dr. Pattee said about the cross-eyed child. We see this condition running through families, with grandparent, parent, and child affected, and at times with two or three members of the same family having the defect. Some say if you put glasses on the patients will have to wear them all their lives. What of it? As Dr. Pattee has said, that eye can be saved for useful vision, so that should the good eye be injured for life, the patient still has some useful vision left in the other eye.

Saponin Barred From Food Products.—The addition of saponin to food mixtures which are sold for use in place of white of egg is debarred by the Bureau of Chemistry of the Department of Agriculture. The practice is usually adopted for the purpose of concealing inferiority, saponin, a vegetable soapy preparation, being used extensively in so-called substitutes for white of egg for the purpose of producing foam and thus giving the articles a fictitious appearance of body and therefore of food value.

A CONSIDERATION OF A FEW OF THE MANY LESSONS IN MEDICINE AND SURGERY TAUGHT BY THE PRESENT EUROPEAN WAR.*

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In the time allotted me it is manifestly impossible to more than touch briefly upon a few important lessons of the present war. A large amount of literature has already accumulated dealing with its medical and surgical phases. In every campaign of history, the evacuation and care of the sick and wounded has presented a most important and interesting study. Progress in caring for the sick and injured has not kept pace with the means for destroying life and property.

The surgery of the present war is chiefly the surgery of infected wounds. It had been expected that modern first-aid methods with immediate iodine disinfection, better fixation and transportation would reduce infection to an almost negligible problem. But ordinary first-aid and external disinfection have failed to accomplish the hoped-for results. This failure is due to the increased use of artillery and to trench fighting. The shrapnel wound is large, ragged and frequently multiple. There is extensive trauma. Infection takes place at the moment of injury and is greater on account of the dirt from which the soldier cannot escape in the trench. It is almost impossible to properly dress the wound on the firing line, and even though first-aid dressings are promptly applied, they are immediately made ineffective by soiling with trench water or the muddy ground.

Infections are for the most part due to the common pyogenic organisms, but in addition tetanus and gas bacillus infection have been of most serious import.

We have been definitely shown that the only logical method of handling tetanus is by the use of prophylactic injections of anti-tetanic serum as soon as possible after infliction of a wound. The use of serum after

*Read before the Medical Society of the City and County of Denver, March 21, 1916. Approved for publication by the Surgeon General.

the onset of symptoms is not effective, as shown for instance in a report of 27 deaths in a series of 29 cases of tetanus treated in a military hospital. The two cases that recovered had a long incubation period and did not receive serum. In 26 cases the serum was used according to all methods recommended—subcutaneous, intravenous, intramuscular, intralumbar, perineural—in all with the same lack of success.¹

On the other hand, Fauntleroy², speaking of tetanus at Val de Grâce, says: "There were at first, as in other base hospitals, a conspicuous number of tetanus cases, but there have been no cases of this disease here for over six months or since the time that the antitetanic serum has been in use as a prophylactic." And Goldschneider³ makes the important statement that since the routine employment of 20 to 40 units of the antiserum in all wounded, no further cases of tetanus have been seen.

Infection by the gas bacillus is productive of the most serious wound complications. No vaccine or serum has been found which influences the progress of this infection. Amputation seems to be the only recourse when gangrene sets in. Before the advent of gangrene free incisions, multiple drainage tubes and the constant application of wet antiseptic dressings is the method of procedure. Various other treatments have been attempted with little or no success, as for instance the introduction of oxygen under pressure into the tissues above the wound.

With our present inadequate methods of handling the gas bacillus infection, we must rely chiefly upon prophylactic measures to control the disease. It has been suggested that the floors of the trenches be covered with small fagots of wood, the walls coated with slaked lime, whitewashed thickly and repeatedly either directly on the dirt or on thin boards held against the walls by means of upright stakes. The clothing of the soldier might be of such material as would not easily become permanently contaminated with dirt.

The use of sera and vaccines in the treatment of wounds, except in tetanus, has in general failed to show any favorable results. We have learned that in modern warfare

wounds cannot be handled with that degree of promptness which is necessary in order that infection may be limited or infective organisms destroyed before gaining headway. In general, three or four days are required for the wounded to reach base hospitals, which allows sufficient time for infection to make rapid progress.

The question of the proper method of treating the extensively infected wounds when under the more favorable conditions of a base hospital has been the subject of much discussion. Sir Berkeley Moynihan⁴ states that the treatment of these wounds by the kind of technique used for the comparatively trivial septic wounds occurring in a civil population was utterly futile and without any value whatever. He arrived at the conclusion that the antiseptics used, whether carbolic acid, iodine or other, were absolutely without value, and that the wounds which responded most kindly were those treated by constant irrigation or immersion.

Naturally enough, if our well-known antiseptics have proven failures under new and heretofore untried conditions, the energies of certain men will be expended in attempting to find some new drug or combination of drugs which will be effective in treating septic wounds. This seems to have been accomplished by Dr. H. D. Dakin, a highly skilled chemist of the Herter Laboratory, New York City. Fauntleroy⁵ writing in this connection says: "All the well-known antiseptics have been tried out in different ways, and Dr. Dakin has compounded, for trial and comparison, 130 different chemical antiseptic combinations. The result of this painstaking experimentation has developed an antiseptic for the treatment of infected wounds which not only unquestionably meets all the present surgical demands, but for clearing up infected and sloughing wounds is practically a specific." This is an aqueous solution of sodium hypochlorite and has been used extensively by Carrel and others with most favorable results.

We have been shown that one of the greatest problems of present-day warfare is the provision of ways and means to promptly and effectually aid the wounded and to

quickly transport them from the battle line to a hospital where they may have skillful and experienced attention. Every hour which elapses between the infliction of a wound and the arrival of the wounded at the hospital enormously increases the extent and danger of infection.

We have learned that it is practically impossible to properly treat the wounded in the absence of hospital facilities, and in order to give every advantage to and minimize the risks attendant upon moving the seriously wounded, the automobile is called into play, and the hospital brought as near the firing line as is compatible with a certain degree of safety.

The automobile surgical ambulance brings the operating room and the surgeon of the base hospital to the wounded. In operating rooms of this kind, operations can be performed earlier and wounds can be better cared for, so that the injured soldier can now be transported further to the rear with less discomfort and a better chance of recovery. An excellent description of the automobile hospital or the real flying surgical unit is given by Surgeon A. M. Fauntleroy of the U. S. Navy in his admirable report on the medico-military aspects of the European war.

The motor ambulance is also helping to solve the problem of rapid transportation of the wounded. It has been found that a light car of the simplest construction is far preferable to the heavier and more complicated car for this work; and these cars must be available in sufficient numbers to properly handle the wounded. When we consider that the French estimate a daily loss of three men out of every hundred in an organization on the march or quartered; that a small formation under heavy fire lose 50 per cent., a division 20 per cent., and an army corps 15 per cent; that in order properly to move the wounded preparation must be made for handling the maximum expected load, and that the motor ambulance which has proven most efficient should not be loaded with more than three stretcher cases in order that its efficiency be not impaired, we may begin to realize the number of motor ambulances re-

quired to care for the wounded of a great army.

Of the many lessons taught us by the present war, one stands out preeminently above all others, and that is the necessity of having an adequate sanitary corps, adequate not only in numbers but in ability and in training. How shall we profit by the knowledge gained in the sanitary care of large bodies of men, in preventing disease epidemics in camps, and in treating wounds on the firing line and in base hospitals, if the men are lacking to carry this knowledge into practice? Shall we if called upon to send an army into the field to protect our land and defend our homes, send with it a medical corps lacking in numbers and training, and repeat the failures and confusion which have been experienced by the medical service of the Army in all our previous wars?

In our last war, which was as nothing compared with the present European struggle, every fifth man who offered his services in defense of his country contracted typhoid fever. Twenty thousand of the hundred thousand men who enlisted were either dead or dying of typhoid fever within six weeks. True, we now know how to prevent typhoid by injections of prophylactic doses of serum; but where are the men who are going to give this serum, as well as attend to the multitudinous other duties incumbent upon the medical corps, if our army be suddenly and rapidly increased to many times its present force.

"The military experience of the entire world during the last twenty years demonstrates clearly that an adequate, well equipped, well trained medical service is of the most vital importance to the effectiveness of any military plans. No matter how capable a surgeon may be in civil life, he cannot be converted into a competent and effective army surgeon over night. . . . The army medical officer must have scientific training and experience, plus training in military methods, camp sanitation, and the proper care of large bodies of men in the field."

England found it necessary during the first five months of the war to issue over two thousand commissions to civilian physi-

cians to meet the needs of her new army. This number has been greatly increased and England today is asking for every available medical man to serve her armies. "The Commonwealth of Australia has sent 28 per cent. of its physicians to the front. No examination as to professional qualifications is required. They are thus doing for their volunteers what we did for ours in our last war—taking all comers, and trusting to luck as to their qualifications."

A large number of medical men have gone from our own country to aid the wounded among the European belligerents. We have in these United States a sufficient number of physicians to care for as large an army as may ever be recruited, but these physicians, competent though they may be in their various lines of practice, are absolutely unqualified to assume duties of a military nature. They are not conversant with the language of the Army. They are ignorant of its various forms and laws.

It is obvious that physicians and surgeons, in order to be efficient and capable under conditions of army life and discipline, must have some special training. It is wholly unnecessary that there should always be ready for service a large reserve corps of highly specialized military surgeons, but it is most necessary that there be a sufficient number of trained medical men to properly care for a suddenly expanded army, trained not only properly to select the individuals, but properly, promptly and effectively to handle these same individuals under the trying conditions of actual warfare. Our own small body of soldiers in time of peace is carefully selected, leads a regular healthful life and is kept in the pink of condition by highly trained medical officers. Upon these medical officers devolves the almost superhuman task of selecting the members of a suddenly expanded army and preparing them in as short a time as possible to resist disease and overcome the effects of wounds.

We have been shown most emphatically that a medical corps capable of serving an army in time of peace is in respect of numbers wholly inadequate in time of war; not only by reason of the fact that the sick and injured are multiplied many times, but also

from the fact that the numerical strength of the army is suddenly and rapidly increased to an enormous extent. This sudden increase of men and officers is made up for the most part of inexperienced citizens, inexperienced not only in military tactics and discipline, but in the knowledge of how to care for and protect themselves in the matter of sanitary and first aid problems.

It is to be hoped that we shall take the lesson of medico-military preparedness to heart, and that our present Medical Reserve Corps of about 1,500 men will be gradually increased by the addition of earnest, competent, and well qualified civilian physicians and surgeons to a number sufficient to meet any demands made upon this country for defense. And it is also to be hoped that members of this Medical Reserve Corps, in sufficient numbers, will devote a measure of their time and energies to acquire at least the rudiments of that medico-military knowledge which is necessary to fit them for service in time of need.

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THE SILENT FEATURES OF TUBERCULOSIS OF THE KIDNEY.*

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It is not generally known to clinicians that a certain well recognized symptom complex may on the one hand be the clinical manifestations of disease of the kidney pelvis, and on the other hand be associated with disease of the posterior urethra and its adnexa; or again that the symptoms may have been referred from disease of some

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

other visceral organ supplied by the same nerve. It is of no little importance to keep this fact in mind, and to remember that various diseases may present the same symptoms; for the prognosis and treatment of the two affections are in no way identical.

A clinical study of a number of cases of tuberculosis of the kidney has enabled me to watch the course of this disease through all its stages. Some of these cases have been followed for eight years, and the presence of interesting mutations in the symptomatology could be recorded. Only too frequently have we seen the symptoms so change as to lull the practitioner into the belief that the patient was cured, and it is to this fact that they owe their greatest potentiality for harm. This apparent cure is one of the interesting features of renal tuberculosis, which lead to dispute between the few practitioners who would treat renal tuberculosis without operation, and the many who would urge prompt nephrectomy as soon as the diagnosis is made. This dispute can be settled by a clearer understanding of what the apparent cure of renal tuberculosis means. It is now understood and more generally appreciated that the variation in the symptoms is due to changes in the activity of the pelvic or vesical lesion rather than to changes in the parenchyma of the kidney. The vast majority of cases of renal tuberculosis that I have operated on presented a pathological specimen in which the renal lesions were more advanced than would have been suspected by the duration of the symptoms. As long as the lesion is confined to the parenchyma of the kidney it causes no symptoms. They become manifest only after the disease has extended through the capsule and caused a perinephritis, or after it has involved the pelvis, setting up a tuberculous pyelitis and ureteritis, which is far more common.

The following types of tuberculosis of the kidney have been found, each giving some salient features which are characteristic of the particular pathological lesion, and presenting some one special sign or symptoms absent in the others:

1. Fibro-caseous type: This type was met with most frequently and is probably the

most common form of surgical tuberculosis. The organ is not enlarged, the surface is smooth and to all appearances healthy. Occasionally a group of miliary tubercles are found on the cortex, marked by fibrous adhesions to the fatty capsule. On section one or more caseous nodules are revealed at the junction of the medulla and cortex, surrounded by a thick layer of granulation tissue or a fibrous capsule. They may appear at the upper or lower pole; later, in the middle zone. The whole area of the disease is wedge-shaped, and is clearly distributed along the arterial tree. In the cortex, at a site corresponding to the location of the oldest nodule, we frequently find solitary tubercles or groups of tubercles. It seems that the ulceration often progresses from the apex to the base of the pyramid until the latter is entirely destroyed. In almost all kidneys thus attacked, examination will show that nature was attempting to shut off the tuberculous area from the rest of the pelvis by fibrous thickening and contraction of the mouth of the calyx. The communication between the pelvis and the lesion may be very narrow, and at times completely obliterated. It is common to find an old obliterated cavity in the upper pole, with a beginning ulceration at the apex of a pyramid at the lower pole.

2. Pyonephrosis type: This is an advanced form of the previous type. The kidney is very large; on the surface are seen rounded bosses, soft to the touch. The kidney substance has been destroyed and replaced by a fibrous mass in which there are large tuberculous cavities and stones formed from secondary infection. The thickening or contraction of the wall of the pelvis or of a single calyx continues to the point of obliteration of the ureter, or the pelvis is lined by a granulation tissue, causing directly either ureteral blocking or stenosis from subsequent contraction. The kidney is shut off from the rest of the urinary tract so that there may be no clinical evidence of tuberculosis in the urine.

3. Hematogenous type: Miliary tubercles appear in the tissue under the mucous membrane of one or more of the renal papillae. They may go on to ulceration, invading and

destroying the pyramids, then by fibrous contraction become closed cavities without causing any other symptoms; or the tuberculous foci may be buried in the parenchyma of the kidney, similarly to those of hemorrhagic nephritis. This form is associated clinically with sudden profuse hematuria.

In the following case, the only urinary history was one of hemorrhage: Mrs. LaJ. was first seen in 1908, with a spontaneous, profuse and painless hematuria, which ceased after a few days. The bleeding returned in the spring of 1913, again lasting a few days. The patient was not seen at this time. In the fall of the same year, after seven weeks of a severe hematuria the patient again came under observation. Physical examination revealed nothing. Cystoscopy showed a normal bladder and normal ureteral orifices. A number seven ureteral catheter was readily introduced into each ureter; and in fifteen minutes the urinary findings were as follows: Left—Amount, Sec.; appearance, clear; urea, 2%; microscopic examination, negative; phenosulphonephthalein appeared in 7 minutes, and amounted in 15 minutes to 10%. Right—Amount, Sec.; appearance, bloody; urea, 0.03%; microscopic examination, blood, pus, renal epithelium; phenosulphonephthalein appeared in 11 minutes, and amounted in 15 minutes to a trace only.

In view of the results of the urinary examination the patient was operated on and the right kidney removed. The upper pole was found converted into a cheesy mass which indicated without doubt an old tuberculosis. The remainder of the kidney showed a few tubercles scattered here and there. Most notable was a fresh ulceration on one of the lower papillae. Pelvis and ureter were normal. Here we find that the clinical picture coincides with the pathological findings, if we assume that the earliest lesion began in the upper pole, and after destroying it was walled off from the rest of the organ, which accounts for the cessation of the hematuria. After the process was quiescent for five years, the lower pole became involved, causing another hemorrhage. Had this patient died during this quiescent period of some intercurrent disease, the erroneous conclusion

might have been drawn that here was one example of spontaneous cure of renal tuberculosis.

4. Fibrous or infiltrating type: The final outcome of a pure infection with the tubercle bacillus is cicatrization and contraction of the scar tissue, or occlusion of the ureter with destruction of the parenchyma of the kidney. Here we find a diffuse invasion of the kidney parenchyma with minute tubercles, as evidenced by epithelioid cells and small round cells, later accompanied by the formation of new connective tissue without any trace of ulceration or caseation.

5. Type characterized by lesions of the renal pelvis and ureter: Occasionally we find the pelvis the seat of the primary infection. Quite recently I removed a kidney, normal in size, and with no external signs of a tuberculous lesion. Bisection failed to reveal the presence of a tuberculous process. On opening the pelvis, considerable thickening of the mucous membrane was observed, with a number of small, raised subepithelial nodules. In one of the recesses of the calyx of the upper pole was found an old caseous tuberculous lesion. These lesions were apparently different stages of the same process. The pelvis was pretty well involved, so that in a short while it would have been filled with granulation tissue, blocking the ureter and causing a hydronephrosis.

A proper understanding of the symptoms and the clinical course of this disease is extremely necessary, as the early diagnosis offers the best hope of a cure, while the disease is unilateral. In 90 to 95 per cent of the cases tuberculosis of the kidney is confined to one side. If left alone, death is certain in from one to ten years, while nephrectomy, if done early, is one of the most satisfactory operations of urinary surgery. Results of operation done on advanced cases, with vesical ulceration and foci in the genital tract, will be disappointing. *Spontaneous cure is unknown.* Although the disease sometimes runs a slow course, with long periods of absence of symptoms, these patients will eventually either die from anuria or uremia, or succumb to

constitutional affections such as amyloid disease, toxemia, cachexia, or generalized tuberculosis.

The silent features of this disease may lead one away from the affected region, and to look for the cause in other directions. The most prominent characteristic is the occurrence of remissions, such as are common in tuberculosis even of other parts of the body. The lesion may be quiescent for years but there always remains a focus of potential activity. The classical symptoms of renal tuberculosis are rarely synchronously observed in the early stage. One of the early symptoms is a polyuria or pollakiuria, which has set in insidiously without cause, with a dysuria characterized by a hazy acid urine, pus and blood, and which becomes chronic and intensified under local treatment.

Diagnosis: To diagnose a certain lesion one must bear in mind the probability of its existence, and the main reason here for the failure of an early diagnosis of renal tuberculosis is the fact that the general practitioner will not be divorced from the old belief that he is dealing with a cystitis, since all symptoms of renal tuberculosis point to the bladder. In the early stages repeated, careful microscopic examination of the urine will aid materially in the diagnosis. If after repeated search of a catheterized specimen of the patient's urine the tubercle bacilli cannot be found, a guinea-pig should be injected to verify or refute the suspected diagnosis. In case the outcome is positive, every practitioner knows that 90 per cent of urinary tuberculosis begins in the kidney, and he should now advise the patient the exact means for localization of the diseased focus.

The finding of tubercle bacilli, accompanied by blood and pus cells, is the only absolute and unequivocal sign of tuberculosis of the kidney. The appearance of tubercle bacilli in the urine does not by any means necessarily indicate urinary tuberculosis. Orth has demonstrated that tubercle bacilli can pass through the healthy mucous membrane from the blood without causing any local lesion. Tubercle bacilli are frequently found in the urine of tuberculous

patients whose urinary tract is innocent of any pathological lesion. The urine should be drawn off from each ureter under proper aseptic precautions, and examined first for tubercle bacilli, pus and blood, and secondly for the functional value of each kidney and for secondary nephritis. There should be no hesitancy in accepting this risk, for it has been found by actual practice that the danger of infection is far less than the disaster to be encountered if this examination is not made; for no patient can be safely nephrectomized unless we know the functional value of each kidney.

The urine in tuberculosis of the kidney may be divided into two stages, that of development and that of destruction. During the period of development there is a polyuria, due to irritation of the renal nerve endings; and a hazy, acid urine containing pus, blood, renal epithelial cells, low percentage of urea and high percentage of albumin, with a variable specific gravity. During the stage of destruction the urine is of a light, milky color, and there is a normal amount, with pus, blood and all sorts of casts, probably due to toxic nephritis of the opposite kidney.

Bladder pain in the early stages is the most frequent and characteristic symptom. It is felt long before the bladder is infected and is due to toxic irritation of the acid tuberculous urine from the affected kidney, although others ascribe it to a reno-vesical reflex. The pain is a cramping one in the neck of the bladder or at the end of the penis, felt just as urination is completed. It may be a rather sharp or dull ache and is usually preceded by a characteristic frequency of micturition. The patient may go along during the day in perfect comfort, but on retiring seems to develop a nocturnal pollakiuria with renal tenesmus and paroxysmal ejection of a clear, watery urine expelled in drops, the attack being occasionally accompanied by chills. This symptom complex in an individual with a negative gonorrheal history combined with a hazy acid urine containing blood and pus in microscopic quantities is very suggestive of tuberculous kidney. It is a signpost which points to cystoscopy and its significance cannot be too often em-

phasized. In a few weeks this symptom disappears, the urine clears and the disease enters the silent stage for months or years, during which the kidney is preparing for another explosion. When this tuberculous focus bursts through into the pelvis another period of bladder irritation occurs. Such attacks may be repeated for a number of years and all the time the kidney is slowly but surely being destroyed. Sooner or later there is an involvement of the renal pelvis, resulting in a pyelitis, with constant pain and pyuria, aggravated after the ureter becomes temporarily blocked. In the early cases this obstruction is usually due to a blood-clot from the eroded vessel; later on in the disease, if secondary infection ensues, it may be due to stricture of the ureter or bloodclot, caseous material, or gravel.

Hematuria may occur in the form of symptomless or essential hematuria; it may be sudden in onset, profuse, lasting some days. Should there be clotting sufficiently to cause blocking of the ureter and distention of the pelvis, renal or ureteric colic will be observed. Where the tuberculous foci are buried in the substance of the kidney it may be impossible to obtain the bacillus in the urine or to find any changes in the kidney or urine apart from the hematuria. I have observed an attack of hematuria as long as five years before the onset of other symptoms. In fact it was the dominant symptom throughout the course of the disease, and finally necessitated operation. This initial hematuria may be due to congestion of the kidney or to a focus of tuberculosis which becomes temporarily shut off from the pelvis. It may occur at any time during the course of the disease from an eroded vessel. Blood in microscopic quantity is usually constantly present. At times there is a persistent terminal hematuria with bladder symptoms, and here the blood emanates from the bladder neck. Many patients will date their pain back to their first hematuria, and this will often have been preceded by frequent miction.

Albuminuria is sometimes found very early, before any other symptom. I have seen this sign once. But it is very elusive, in the early stage being intermittent. In

later stages it might be permanently absent in cases of total destruction of the kidney, in the type known as closed tuberculous pyonephrosis. The affected kidney may pass less albumin than the nonaffected kidney. Albumin from the non-tuberculous kidney means a toxic nephritis and will usually disappear after nephrectomy of the diseased side. Casts are more frequently found from the kidney affected with secondary toxic nephritis than in the tuberculous one. In such cases the determination of the blood pressure serves as an aid to diagnosis. The cases in which I have taken the blood pressure showed a lower reading, in contradistinction to the hypertension in most of the other kidney affections.

In suspected tuberculosis of the kidney, the physician usually first inquires as to the presence of pain. As a matter of fact, this symptom is often absent throughout the disease. Hence the term "silent features", as there may be nothing to call attention to the kidney. The diagnosis must be established by other means. Even when pain is present it is often a misleading sign, as it is usually felt in regions remote from the kidney. If we consider the cause of pain in the kidney we can better appreciate why it is present in some cases and absent in others. When present, it is expressed by renal colic, a renal pain fixed or referred to other parts of the body. Ureteral obstruction may cause renal pain, especially if intermittent. Any stimulus capable of exciting excessive ureteropelvic muscular contraction may produce renal colic in connection with the tuberculous kidney. This stimulation may be due to chemical or toxic changes in the urine or to mechanical irritation from the efforts to propel a blood clot along the ureter. Later in the disease it may be due to caseous material or gravel, if secondary infection is superadded. If the inflammatory process involves the ureter or pelvis it may cause painful spasmodic muscular contraction of these structures. The same will take place if there be obstruction of the lumen of the ureter from granulation tissue, or stricture from secondary contraction, or kinking of the ureter in the large pyelonephrotic kidney.

Fixed pain is caused from traction on the

inflamed capsule and its attachments. In other words, pain is not an essential accompaniment of disease of the kidney proper, but if the capsule is stretched from internal distention, pain is produced with all its agonizing effects. It is rare to have pain in the kidney in the absence of obstruction. I have seen one case completely autonephrectomized, yet this patient never complained of pain in the back. In cases with no obstruction to the free flow of urine, fixed pain is not to be expected unless the disease spreads to adjacent structures, and when present is a dull, lumbar ache little influenced by rest movement or position, and usually worse at night. After the renal pelvis has lost its power of contraction the intermittent colic gives way to a constant fixed pain, due to a drag by the heavy organ on its attachments. At this time the opposite kidney may become congested, enlarged and painful, while the diseased kidney may atrophy and cease to functionate. Unless attention is paid to the results of ureteric catheterization, the silent feature of this kidney may be overlooked and the healthy kidney removed with disastrous results.

Patients suffering from early renal tuberculosis will at times complain of pains more or less intense on either side of the abdomen, at the crests of the ilei, the hip, or the sacrum. Such pains are especially marked in a kidney surrounded by adhesions, the painful sensation being carried through the ileohypogastric, ileoinguinal, genito-crural and external cutaneous nerves. Others complain of painful sensations at the side of the bladder or urethra, or in one labium or one side of the vagina. Such pains are referred through the renal sympathetic and are more noticeable in cases involving the pelvis and ureter; these painful sensations being connected with or independent of micturition.

Palpation: Evidence obtained by this method of examination should be accepted with caution; for example a diminution in the size of the kidney, due to cicatricial contraction subsequent to caseation, may lead the physician into error, particularly if the healthy kidney has undergone compensatory hypertrophy. He may then wrongly transpose his diagnosis, thinking that the larger

kidney is the diseased one. The fibrous type often presents itself as a small, smooth, hard kidney, with limited motility. On the other hand, a very large kidney may be bound down under the ribs by adhesions and thus elude palpation. At times a vast pyonephrosis is formed which fills half of the belly. Enlarged tuberculous kidney will usually be found less movable than the healthy kidney, owing to the fact that the organ is surrounded by adhesions.

General Symptoms: The patient may or may not present the general character of tuberculosis elsewhere in the body. In the average case anemia, wasting and cachexia are not observed for many months or even years. Sweating chills and fever are signs of secondary infection and are due to the absorption of toxins after suppurative processes have begun. In this stage the loss of weight, appetite and strength may be very marked.

On the basis of the evidence brought forward above, the conclusion appears to be justified that every modern general practitioner, without special training or special instruments, should be able to recognize the existence of urinary tuberculosis.

I will admit that in some instances the diagnosis can only be made with a certain amount of probability. But in the majority of cases, provided he applies careful and painstaking study to the analysis of his case, the physician will be able to gather sufficient data for a focal diagnosis. The main reason for failure in the early recognition of renal tuberculosis lies in the fact that we are not on the look out for it.

452 Metropolitan Building.

DISCUSSION.

William M. Spitzer, Denver: This paper is very timely, in that the author calls the attention of the general practitioner and the general surgeon to renal tuberculosis. Renal tuberculosis is not to be diagnosed by any signs or symptoms from the kidney; when there are signs and symptoms in or about the kidney, they are signs caused by a tuberculous hydronephrosis or pyonephrosis, or by a paranephric abscess; which conditions of course will give symptoms peculiar to themselves, whether the infecting agent be the tubercle bacillus or not.

As a general rule, the symptoms of tuberculosis of the kidney are all bladder symptoms. There is no such thing as cystitis which lasts for four weeks without some underlying pathologic condition being at the bottom of it. As a

matter of fact, cystitis per se is rare; and the symptom-complex, called cystitis, is as a rule posterior urethritis. When this so-called cystitis persists there is something keeping it up, which something is either pyonephrosis or hydronephrosis, or ulcers or syphilis of the bladder, or one of other conditions too numerous to mention here, so that all these cases should be thoroughly investigated by a competent urologist, to the end that an exact diagnosis be made.

Please do not forget that about ten per cent of all tuberculosis in the body is renal tuberculosis. Also do not forget that renal tuberculosis is characterized by remissions; therefore, when you give Lydia Pinkham's compound for these cases they are apt to improve and you are prone to think you have cured the condition; but that you have not will be well demonstrated to you because the symptoms will return, as a rule within a few months' time, or even less than that.

Of importance to us is the fact that renal tuberculosis by itself will kill where the lung lesions in a given patient are practically curable, and where if the kidney had been removed the patient would have lived the balance of his natural life in complete comfort, whereas the renal tuberculosis being present, and the double burden being too much for him to bear, he will die in a few months or a few years, having been extremely uncomfortable all this time.

The most uncomfortable patient in the world is he who suffers from bladder tuberculosis, and this is inevitable after renal tuberculosis has been present for a variable length of time. And it is the frequent and painful urination which makes his life unbearable, during both day and night. When the bladder becomes ulcerated, painful urination every two or three minutes completes the picture. At this stage, the patient is as a rule praying for death, and if one removes the infected kidney, he has not accomplished much because there remains the bladder condition.

Rovsing and Keyes have lately made many suggestions as to the cure of the bladder condition by the injection of certain solutions after removal of the infected kidney, but it must be that they fail to take into consideration the pathology present. The ulcers present in the later stages of bladder tuberculosis involve not only the mucous membrane, but extend deep into the muscular tissue and sometimes into the fibrous coat of the bladder. Here a cure is impossible, and the patient suffers, although not so much after nephrectomy as before. On the other hand, if these patients had been operated on before there were many lesions in the bladder, and before these lesions extended into the deeper tissues, the bladder would have recovered completely by itself, without treatment. In some of these cases operated on early, the promptitude with which the bladder symptoms clear up is wonderful. We cannot expect much from vaccines and sera in these cases, and tuberculin has had its day. I think we are all agreed that it is unjust to the patient to use such things, thereby delaying proper treatment.

As to the urine in tuberculosis; generally speaking we may lay down the following rules: That where cystitis exists in the presence of an acid urine, we have to deal either with tuberculosis, with a gonorrheal infection, or with a colon bacillus infection. It does not follow that we must have an acid urine in tuberculosis, but in easily 90 per cent. of the cases we do

have, and where an acid urine and cystitis co-exist, it is always necessary to exclude tuberculosis.

The essayist, if I did not misunderstand, said that one should find tubercle bacilli in the urine before operating. This is not always possible, even though the infection be tuberculous. There are cases in which we have injected pigs with negative results and have failed to find tubercle bacilli under the microscope, and have, despite this, removed a kidney for tuberculosis, because of certain bladder findings, together with the appearances and findings from the segregated urines. We are even justified in removing a kidney in cases where it is impossible to catheterize its ureter or collect water from it, providing we can exclude its fellow, and provided the bladder findings show its guilt.

Oliver Lyons (closing): I believe Dr. Spitzer misunderstood me as to the finding of tubercle bacilli in cases with profuse hematuria. In these cases it is absolutely impossible to find tubercle bacilli in the urine, as there may be nothing but just a little ulceration of the papillae of the kidney. These patients bleed profusely, and it may be necessary sometimes to do a nephrectomy for the hemorrhage.

As to the cases with intermission of symptoms, I have seen a good many who thought they were cured by some popular genito-urinary soothing syrup they happened to be taking at the time their symptoms passed off but in due course of time these latent symptoms became active, even after a long period of quiescence.

REST OF THE INDIVIDUAL LUNG BY POSTURE. (Preliminary Report.)

GERALD B. WEBB, M.D.; A. M. FORSTER, M.D.;
F. M. HOUCK, M.D.
Colorado Springs.

Respiration in the normal individual takes place nearly thirty thousand times a day. When a patient rests on one side at night, the dependent lung is restrained in motion, but the upper lung opens and shuts some twelve thousand times in ten hours of sleep.

We have noticed a marked tendency for the consumptive to lie on the side of the better lung at night, having found that lying on the side of the more diseased lung precipitates coughing. It therefore happens that the very lung that needs the most rest is getting the most work.

Such excellent results have been obtained in some cases of pneumothorax that it occurred to us to attempt to train patients to rest at night and during day time on the more afflicted side, and in addition to place

*Read before the Medical Society of the City and County of Denver, April 18, 1916.

a small firm pillow under this side to restrain to a greater degree its motion.

Bier's hyperemia would seem to have proven serviceable in tuberculous joints. In cases of mitral stenosis it has been suggested that the rarity of development of pulmonary tuberculosis was possibly due to a certain amount of back blood pressure causing hyperemia of the lungs.

There is probably little hyperemia of the dependent lung in a normal person during sleep, yet in a tuberculous lung there is possibly developed not inconsiderable hyperemia.

The application of the principle above suggested would seem to have been efficacious in many patients for a year past in reducing the amount of sputum, promoting healing, hindering relapses and diminishing fever.

OSTEOARTHRITIS.*

H. W. WILCOX, M.D., DENVER.

This term is used in this paper to cover a large class of chronic joint conditions, non-tuberculous in character, occurring for the most part in adult life. A great amount of investigation, both clinical and pathological, has failed to give a thoroughly satisfactory understanding as to the etiology and morbid changes in these joint conditions, hence no definitely descriptive term or classification covering the entire group, satisfactory to all observers, has yet been arrived at.

Arthritis deformans is the term most generally used, other descriptive terms being rheumatoid arthritis, rheumatic gout, and osteoarthritis. Perhaps the most satisfactory division of these cases and one that has the merit of giving a clear working basis is the classification of Goldthwaite¹, under three separate heads:

1st, **infectious arthritis**, under which are included "all pathological processes in the joints which conform clinically or histologically to those diseases in which bacteria or their toxic products give rise to lesions elsewhere".

2nd, **atrophic arthritis** as descriptive of

the rheumatoid arthritis of English and continental pathologists.

3rd, **hypertrophic or osteo-arthritis**, under which class come the conditions known as Heberden's nodes and morbus coxae senilis. A classification which has been suggested by Nathan, another American writer, divides these joints into two large classes: first, inflammatory or infectious; second, metabolic or trophic, further subdividing these two groups into the milder or synovial forms and the severe or osseous forms.

However, the opinion is growing among those who have the largest opportunities to observe these cases that the division into different classes is to a certain extent artificial, and that the various types represent different stages, earlier or later, of a practically identical pathological change, differing in degree in proportion to the greater or less severity of the causative agent, and the resistance and histologic character of the particular tissue of the joint involved. Thus in a recent article Painter says: "I think we have passed the point where we are prepared to say that, whatever they may be pathologically to begin with, they all eventuate in the same thing. In other words, the infectious, toxic or rheumatoid arthritis is an acute process which terminates in osteoarthritis as was claimed by many of the English writers; or even that the toxic or infectious type is identical with the atrophic, the only difference being that the latter is a more pronounced manifestation of the same etiological factors that cause the former".

Adopting the classification first mentioned (Goldthwaite's) it is certain that the causation of the largest number of these chronic joints is an infection somewhere in the body.

This does not imply that it is by any means an easy matter in all cases to say just where the original focus is located, but the work of many investigators during the past few years has resulted in the discovery of several species of micro-organisms in various tissues which have by inoculation experiments upon animals caused an arthritis similar in its characteristics to that of the host, the causative bacterium being again ob-

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

tained from the diseased joint fluid and tissues.

Especial mention should be made of the brilliant work of Rosenow², who by a special method of preparing tissues in vacuo, having regard to the degree of oxygen tension, has obtained from diseased joint tissues, and especially from the glands draining the diseased joints, several varieties of bacteria which had not previously been isolated.

These belong for the most part to the streptococcus group and are all pathogenic for animals, although less so than the pus-producing streptococci. These cocci when injected intravenously into rabbits have been found by Rosenow and others to cause a multiple arthritis which in many of the joints persisted and caused considerable deformity, with the formation of exostoses and other hypertrophic changes.

The focus of infection seems to be more often located in the head and upper respiratory tract than in other portions of the body, especially the faucial tonsils and the teeth (pyorrhea alveolaris), less frequently, the accessory nasal sinuses and middle ear, the genito-urinary tract being responsible for a considerable number of cases, while the gastro-intestinal tract has not been, up to the present time, so positively implicated, although the products of deranged function of the digestive organs have been under suspicion perhaps more than any other cause.

In many cases, however, even the most painstaking search for the causative infectious agent fails to find it, and here serologic tests may be of aid. The complement fixation test has been of considerable service in the diagnosis of gonorrheal and other joint infections.

Granting that a majority of these chronic non-tuberculous joint affections are caused by an infectious agent or its toxin derived from a local infection in some other organ or tissue, there remain many cases in which some other etiologic cause must be sought, and it is in the so-called metabolic class, including the atrophic and hypertrophic varieties, that these are placed.

Derangements of the physiological processes of digestion, secretion and excretion have been the basis of much study in these

cases, and considerable evidence has been brought forward to show that calcium metabolism is abnormal, calcium being retained in too large amount in one class of cases, the atrophic.

The metabolism of the alimentary processes has been given an enormous amount of attention, the intestinal flora having been accused of elaborating toxic substances which, circulating in the blood stream, reach and cause morbid changes in the joint tissues, another evidence however of a primary infectious cause. The anatomical malposition of the abdominal viscera, to which Goldthwaite³ has called particular attention, has undoubtedly an influence upon the digestive functions, delaying excretion and favoring absorption of waste products which may again reach the joint tissues and cause disease.

Wollenberg's⁴ theory of a vascular cause for the hypertrophic type of joint attempts to prove that the joint disease results from impaired nutrition due to arteriosclerotic changes in the vessels supplying the joint, and that the thickening and occlusion of the blood vessel can be traced back to such causes as trauma and senility.

Trauma is often the only cause which can be found for many of the cases of the hypertrophic variety, either a single, severe injury, or long continued slight insults. In fact, one of the most recent theories advanced to account for the hypertrophic joint is that of Preiser, founded upon the fact of persistently acting slight traumata.

Any abnormal static condition of a joint, what Preiser terms a "pathological incongruence" of an articular surface, such as would obtain for instance in a fracture or a knock knee, or a pronated flat foot, will if persisting affect all the other points of the leg or arm, causing strain of the capsule, and displacement of and consequent abnormal pressure on the cartilaginous surfaces, and changes in the nutrition of the joint, leading to pain, atrophy, and as a terminal change, the formation of new bone about the margin of the cartilage.

Clinically these cases have certain symptoms in common, while each group has some definite characteristic which distinguishes it

from the others. In all pain is the prominent symptom, varying in severity according to the degree of distention of the capsule, and increased by motion. In the infectious variety it is apt to be more severe than in either the atrophic or osteoarthritic form.

In the atrophic or rheumatoid arthritis pain is frequently absent early, and in the later stages is occasioned by motion, because of the changes in the capsule and in the articular surfaces of the bones. In the hypertrophic type also pain is felt only on excessive use of the joint.

The infectious joints, as a rule, begin rather acutely, depending of course upon the severity of the infective agent: this affects many joints, but the force of the inflammation is directed to one or two joints in which the chronic changes occur. All of the joints to be affected are attacked within a comparatively short time. There is generally a slight continuous elevation of temperature, with the pulse rate increased rather out of proportion to the corresponding temperature. There may also be enlargement of the lymph nodes adjacent to the inflamed joints.

The atrophic type is also polyarticular, and begins in the small joints of the hands, the large joints being progressively involved; the spine is not often attacked in this class. Following the joint swelling, which is due to capsular thickening and not to fluid exudation, flexion deformity gradually comes on, being the result of thinning and disappearance in part of the cartilage, and contraction of the thickened synovial membrane and capsule. Poor circulation in the extremities with sweating, and certain trophic changes in the skin, such as pigmentation and thin, glossy, dry skin over the joints, are quite characteristic. There is as a rule no elevation of temperature, and the pulse is correspondingly slow.

The hypertrophic cases come on slowly and insidiously, often give a history of definite trauma, and attack but one joint, usually one of the larger joints, particularly the hip and knee. There is no constitutional reaction, and patients are well nourished, but the pain and disability occasioned by attempts at use, in the joints of the lower ex-

tremity which are most often involved, cause great distress.

In the spinal form of this type there is deposition of osseous tissue along the margin of the individual vertebrae, which locks the spine rigidly in that particular portion. When these outgrowths of bone encroach upon the intervertebral foramina, the spinal nerves will be irritated so that not only is there pain locally in the spine, but also in the area of distribution of the pinched nerve.

The treatment of conditions having such varied and oftentimes obscure etiology has necessarily been far from exact, and has run the gamut of therapeutic procedures. Certain principles in the application of remedies are, however, very clear.

1st. Any inflamed joint should be put as far as possible in a condition of absolute rest. This relieves pain and tends to arrest the changes going on in the joint tissues, thus preventing deformity and possibly ankylosis.

2nd. If the focus of infection is known and is accessible to removal it should be gotten rid of. Billings⁵ believes that following this an autogenous vaccine should be given, and he has been favorably impressed with the apparent results.

3rd. If there are deformities which can be corrected either in the diseased joint or in other joints closely related to it, any such static fault should be corrected and the joint held in the normal position by whatever means necessary.

Even if ankylosis should result, the joint, particularly if in the lower extremity, will still be capable of considerable use if it is in a correct anatomical position.

4th. Internal medication seems not to influence the reparative process to any great extent.

It is a well known fact that antirheumatic drugs, if long continued, have a distinctly harmful effect, except in relieving pain. In the atrophic variety Nathan⁶ has been an enthusiastic advocate of the long continued administration of thymus gland substance, claiming remarkable benefit in many instances. There are so many other factors, however, to be reckoned with in his treatment that one cannot be sure of the especial

effect of the thymus, except that it does seem to have quite a marked pain-relieving property. The extract of the pituitary gland is also reported⁷ to relieve pain and to cause improvement in the joint condition, favoring absorption with a marked improvement in the general health.

The use of physical measures such as dry hot air or electric heat has a local stimulating effect upon the joint, by increasing the activity of the circulation. Hydrotherapy, if properly administered, will also have the same beneficial effect. Late in these cases, after the painful period is past, massage and passive motion to improve the tone of the muscles which act upon the damaged joint and to preserve and possibly to increase a certain amount of motion, should be used. In the hypertrophic joint operative procedures to remove bony outgrowths which interfere with and cause pain upon motion are justifiable.

Attention should, of course, be given to the hygienic surroundings of such patients, the bodily resistance built up to as high a state as possible, and a hopeful attitude of mind encouraged in these sufferers.

220 Metropolitan Building.

DISCUSSION.

S. Fosdick Jones, Denver: In discussing the subject of osteo-arthritis I should like to speak of one type of this affection which follows traumatism. In these traumatic injuries in or about the joints, which at times, though very slight, may cause distinct pathological joint lesions, the *modus operandi* in the production of the osteo-arthritic changes is still somewhat obscure, but primarily it is believed that following traumatism there is an associated laceration of the nutrient artery of the bones, and consequently the blood supply to the articulations is temporarily interfered with. We are more apt to see these joint manifestations in elderly people following slight injuries, and in individuals who present marked arterio-sclerosis, but it is not an uncommon condition in young individuals. I wish briefly to report two cases occurring in my practice.

The first case concerns a woman of 44 years, who in December, 1914, slipped and fell, striking her right foot against an iron railing. Following her injury, which resulted in a sprain of the internal lateral ligament with no damage to the bony structures, the extremity was immobilized in plaster of Paris, followed by adhesive plaster dressings. Within three weeks she was entirely relieved from her pain, and began to resume walking. One week later, without subsequent injury, pain in the ankle returned, and walking became difficult and finally impossible, owing to the pain. She was referred to my care two months after the original injury. On examination the entire foot and ankle were found swollen and infiltrated; the skin was not reddened; there was slight local

heat; no sign of abscess, but distinct limitation of motion in all directions, the foot being held in pronation. A skiagram, kindly taken at this time by Dr. S. B. Childs, showed an osteo-arthritic involvement of the astragalus, posterior portion of the os calcis, internal cuneiform and the internal malleolus of the tibia. The periosteum covering these bones was greatly roughened and hypertrophied, but there was no diminution of lime salts in the bone substance. An immobilizing dressing of plaster of Paris was applied, with the foot placed in the corrected position. Absolute rest in bed was insisted upon for one month. The pain gradually subsided, and at the present time she is able to walk about, wearing a light supporting apparatus. The skiagraphs show clearly the lesion referred to.

The second case of this particular type of traumatic osteo-arthritis occurred in a man of 23 years, a policeman by occupation. While wrestling, his right forearm was suddenly and violently hyper-extended on the arm. He experienced sudden pain in the right elbow joint, which became moderately swollen and sensitive to pressure. The X-ray revealed no fracture or dislocation. An immobilizing dressing was applied and he then carried the arm in a sling for nearly one month. At the end of this period the pain had practically subsided, and he returned to his work. Six weeks later he noted a beginning "stiffness" and return of pain in the previously injured elbow. The range of motion in the joint became greatly limited, particularly so in extension. The skiagraph shows a marked osteo-arthritis of the elbow joint, of the hypertrophic type. Photographs show the extent of the deformity and the marked limitation of motion in both extension and flexion. This case is one in which an arthro-plasty has been advised, hoping by this means to increase the range of motion and reduce the deformity.

MORTALITY IN ABDOMINAL SURGERY.*

EZRA C. RICH, M.D., OGDEN, UTAH.

There is much reason to believe that the death rate from abdominal operations is greater than it should be, and if so, this subject is not receiving the attention from the medical profession it deserves. The dexterity with which abdominal operations are done in the many clinics of our country makes this an alluring field for the young men in the profession.

Most recent graduates leave their hospital training with a firm determination to do all this class of work they can get. In sections where hospitals are open to all graduates alike, nearly all do abdominal surgery.

That the death rate from abdominal surgery is lower in some hospitals than in others, and lower in sections of the country where there are plenty of well equipped hos-

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

pitals and surgeons, proves that the general mortality can be lowered.

Abdominal operations have increased so much in the last ten or twenty years that we should be amazed if we had the exact figures. The mortality is so much lower than it was a few years ago that we are prone to congratulate ourselves all the time on what we have done, and to think too little of the best methods to be used in order to reduce the number of deaths to probably almost half of what they are.

Every surgeon is anxious to save his patients, and every hospital is very much interested in keeping down its death rate. A dead patient who might have lived is a great detriment to the surgeon and to the hospital. How can this matter be improved, or in other words, how can this death rate be reduced?

There are three factors to be considered: the patient, the hospital, and the surgeon. All are very important. Many lives will be saved by better and more careful examination of patients before operations. Emergency operating is getting less frequent. No doubt too little attention is paid to blood count and to blood pressure.

Many appendices are removed every year from patients who are suffering with beginning pneumonia, and on the other hand gangrenous appendices and perforations of the stomach and duodenum are treated as ptomaine poisoning.

Almost all abdominal operations are done in hospitals, and when we consider that about ninety-five per cent of the deaths are due to sepsis, we cannot speak too strongly on the necessity for a thorough organization of the staff for each hospital to prevent an epidemic of pus infection which is so easy to start and so difficult to eradicate.

The staff of each hospital should prescribe the method of preparation of the patients, of sterilization of instruments and preparation of the operating room; and also determine what surgeons may operate in the hospital. General after-treatment should also be prescribed, and varied by each individual surgeon as he thinks necessary.

It may be thought that some of these regulations would interfere with the individual

rights of many of us, and perhaps they would, but lives will be saved by them. Confusion in orders has cost many lives. A number of the hospitals in your state may have all these suggestions or something better already adopted. If so, I believe the death rate will be found lower than the average.

Drugs need hardly be mentioned as having any bearing on the mortality, except as they are used in the operating-room and in the preparation of the patient.

As already stated, sepsis is the great death reaper in abdominal surgery. We all hope for a time when patients can be vaccinated against the severer forms of infection, but up to the present time we have been disappointed, and serum treatment in peritoneal sepsis has very little effect on the course of the disease.

The greatest factor to be considered in lowering the death rate in this and all other forms of surgery is the surgeon. His judgment as to what cases should be operated upon and what cases should be left alone, as to the time to operate and the time to wait, and as to how much and how little should be done; the time saved in operating on the very weak and those suffering from severe shock; the care and ease used in handling the patient; the confidence instilled into the already frightened and nervous individual, and many other things that cannot be thought of all make a great difference in the death rate.

Perhaps all patients requiring abdominal operations cannot be gotten to a good hospital during the period when the operation is most indicated, and in some sections cannot secure the services of an experienced surgeon. In these cases it is a great question if more people would not live if not operated on at all, than if operated on by inexperienced surgeons in poorly equipped hospitals or in private homes.

In the older districts the profession is more generally divided into surgeons and internists, while in the west, where the hospitals are open to all, often each physician does his own surgery and all are internists, and the death rate is consequently higher.

A little over a year ago, I spent consider-

able time in looking up the death rate from appendicitis in Utah for the year 1913. Most of the deaths were following operations. I found that our average death rate was very much higher than the average for the entire registration area of the United States.

A very large percentage of the deaths from abdominal surgery are due to appendicitis. The operative treatment of appendicitis is so well understood now and so generally follows the same lines, that there should not be a great difference in the death rate. Yet every once in a while we hear of some one treating acute appendicitis the first day by one man's method and operating after another man's method where there is general peritonitis with great distention. All this is due to a wrong understanding.

This subject should be kept before the profession. If a committee were appointed each year to write up the mortality of the state and have it read at the state meeting and opened to general discussion, it would undoubtedly save many lives.

To the medical profession who realize the danger from sepsis, especially in abdominal operations, in poorly equipped hospitals and inexperienced operators, the public have a right to look for regulations.

In Utah, and I suppose most other states, any one may start and maintain a hospital, and have all kinds of operations done, if done by a registered physician or surgeon, without any inspection from a state official, while the milkman, the grocer and the vegetable vendors are all subject to rigid inspection.

I believe the state board of health could close up a hospital if it so desired or thought the institution dangerous, but I have never heard of a hospital being inspected.

As stated before, if this subject of the death rate can be kept before the profession, and they are constantly reminded of the deaths caused by lack of proper examination and prompt treatment, I am sure many lives will be saved.

Life Extension.—The Department of Health of the City of New York is undertaking in a small way a new departure in preventive medicine. At an occupational clinic, special attention is given to the examination of workers in various occupations with a view to the discovery of incipient pathology of the heart, kidneys, lungs, etc.

THE EFFECTS OF DRYING ON THE VIABILITY OF GERMS.*

JOSEPH M. SHAPIRO, M.D., M.S., (P.H.),
DENVER.

The study of the prevention of disease is in part dependent upon a knowledge of the biologic characteristics of microorganisms. The measures employed by sanitarians against the spread of communicable and transmissible diseases are suggested by the behavior of the causative agents after they have been transferred from the human body to the various media found in nature. Where the exanthemata are concerned, direct study is impossible, but deductions and observations allow at least relative conclusions to be drawn.

It was more than a decade ago that Flugge and his pupils carried on extensive investigations on the infectivity of dust after it has once been contaminated. Tuberculosis was then the subject of greatest importance. In the laboratories germs were sprayed, dried and tested for viability. At the same time the experimenters transferred large numbers of germs on to inert objects and tested them for viability after lengthy exposure to drying. For the sake of brevity I will tabulate the results of the many experiments and then present my own few experiences. (See next page.)

The above experiments were done under different conditions, and the results do not correspond. The reason for diversity of opinion lies perhaps in the fact that laboratory experiments are never much alike: the question itself is perhaps of such nature that a uniform solution cannot be offered. Although some claim that their findings simulate actual conditions in life, yet it is evident that in attempts to imitate the realities they used methods that suited best their individual judgment. It is well to remember Ficker's statement, that a laboratory experiment may at least once repeat itself in life.

I aimed to work with throat secretions from diphtheria patients. Six swabs were

*Abstract of thesis for the degree of Master of Science in Public Health, University of Colorado.

The Longevity of Germs After Drying. (ds. = days).

Kind of Germ.	AUTHORS.					
	Ficker.	Germano.	Winslow & Abramson.	Kirstein.	Teague.	Buckley.
Cholera	24 hrs. 16 ds. (5 ds. old culture). 42 ds. (moist chamber). 140 ds. addition of bouillon).				2 minutes on slides.	Few hrs.
Typhoid	4 ds. 9 ds.	1-5 ds. dried in sand. 4 ds. in feces. 50 ds. on linen. 90 ds. on wool.		24 hrs. on Petri dishes.	36 hrs. on slides.	12 ds. on glass. 91 ds. on plaster.
Diphtheria	14 ds. in desiccator.	30 ds. in dried sand. 50 ds. in moist sand. 4 mos. on membrane.		24-48 hrs. on Petri dishes.	60 hrs.	6 ds. on paper. 41 ds. on lime wood.
B. Coli.....			99 per cent gone in 24 hrs. when dried in sand.			64 ds. on wood. 80 ds. on limewood.
B. Prodigiosus...				18 hrs. spraying on Petri dishes. 7 ds. spraying on silk. 68 ds. washing silk in bact. emulsion.	10 hrs.	
Staphylococcus ..				8-10 ds. on Petri dishes.	4 ds.	53 ds. on glass. 140 ds. on plaster.

taken from the throat of a patient at the Steele Hospital. She was at the hospital for five weeks. Although the last positive culture was taken four days before I took the swabs, not a single diphtheria organism was found in smears from six Loeffler's tubes that I inoculated with the swabs taken from the throat. However, staphylococcus was found, and it was decided to carry through the experiment. The swabs were rubbed over the bottom of twelve sterile Petri dishes in the form of a U-shaped smear, the dishes being exposed in the shade and to indirect sunlight. The dish swabs were tested for viability on successive days. The organisms exposed to indirect sunlight were killed in less than twenty-four hours. One swab gave a growth on the second and third days. The other two gave a growth on the fourth, but not on the fifth day; three dishes out of four showed a few colonies on the second day; three out of seven showed a few colonies on the fourth day.

Two cases were seen in Louisville some time after they were given antitoxin. Cotton swabs showed streptococci as the prevalent organism in one case. Petri dishes were inoculated with the swabs from this

case. The dishes gave a rich growth on the second day; there was a small growth on the fourth day in the other two dishes, and no growth after that. One swab gave a growth on the second day.

Work was then begun with a known diphtheria organism which I isolated from a mixed throat culture, that was probably not more than two weeks old. A broth bacillary emulsion was made from the growth (twenty-four hours) on blood serum tubes. Sterilized cotton swabs of rather large size, glass rods, and sticks of wood were selected as material for careful inoculation. The objects were first tested for growth, then placed in sterilized glass containers with slightly lifted covers to admit air. On subsequent days tests were made on Loeffler's tubes for viability.

The wood sticks gave a rich growth up to the third day, small growth on the fourth to sixth days, no growth on the seventh day. The glass rods gave a rich growth up to the fifth day, a small growth on the sixth and seventh days, no growth on the eighth day. Absorbent cotton swabs gave a rich growth up to the tenth day, no growth on the eleventh day. The Petri dish

that contained the diphtheria emulsion was filled with glycerin broth on the thirteenth day. The material was completely dry. The broth was well stirred. A rich growth was found after twenty-four hours inoculation.

Another case was then seen in Louisville. Four rather heavy swabs were taken from the membrane, and all gave a good growth of diphtheria. The swabs were then exposed in the north side of the laboratory of the Dennison building. A positive diphtheria growth was obtained on the third day, no growth on the fourth day. Staphylococci and streptococci were found on the fourth day. On the fifth, sixth and seventh days only staphylococci were grown. On the eighth day no growth was obtained.

The first and second experiments probably showed that infected material from human throats, when transferred rather sparingly to glass dishes, will retain the pyogenic organisms, staphylococci and streptococci, alive from three to four days. These organisms were found viable on inert objects for a period extending over a few weeks and months, when experiments were done with cultural organisms, and when the objects were soaked in the emulsion. We immediately think of Ficker's warning as regards the thickness of material used. Teague dried staphylococci on slides that he inoculated with absorbent cotton dipped into bacillary suspension; on the fourth day he found ninety-four colonies, while on the first day he found innumerable colonies. The same observation holds true regarding other organisms. Uffelman found typhoid viable from twenty-one to eighty days. Germano inoculated Petri dishes with typhoid from culture. The dishes were sterile in a few days.

The third and fourth experiments may be somewhat significant. That diphtheria organisms remain viable for a long time after exposure to drying is known. Germano dried them in sand and grew them after thirty days. Ficker dried diphtheria in the desiccator for fourteen days and grew them on that date. Buckley found them viable after 41 days on lime wood and after six days on paper.

Some authors show that diphtheria organ-

isms live longer; others claim shorter viability. Ficker proved that the difference in results depends upon a number of conditions that one has to contend with when he is working with bacterial cultures: age of culture, thickness of transplanted material, part of colony used to obtain growth, kind of solution used for the bacillary suspension.

Allowing for the differences in results reached, which are at times very marked, and assuming that diphtheria organisms are apt to remain viable for a long time, has this any bearing upon the actual conditions that are encountered in life? Buckley believes that infection can persist in dry buildings for at least a period of 114 days in case of diphtheria. The assumption is based on his finding that when a piece of paper or wood is soaked for one hour in a thick emulsion from growths on four agar tubes dissolved in 2 cc. of bouillon and then exposed to drying, it will retain live organisms after fifty to seventy days. This would be true if we were convinced that a patient spreads that amount of infection in coughing, sneezing, or even directly inoculating objects with his mouth or throat secretions. On this basis Teague may claim that infection can persist only for four days, as he found no diphtheria organisms on the slides after four days exposure to drying. Barring purposeful and careless expectoration, the patient can at best give a droplet infection which is equivalent to a spray. The results obtained after spraying germs are far from showing persistent viability of organisms. Kirstein sprayed diphtheria bacilli on Petri dishes; the viability lasted from twenty-four to forty-eight hours. Prodigious sprayed last-ed for twenty-four hours on dishes and for three days on paper. He washed silk in prodigious emulsion, and the viability lasted for sixty days and longer. Hutchinson found few germs surviving in eight hours after spraying.

With school children a pencil is a common medium for conveyance of infection. It is hardly possible that the material left on the pencil after keeping it in the mouth will be as abundant as one could get by soaking the pencil in a pure culture of bacilli. Chapin

tells that Williams found diphtheria bacilli on pencils that were kept in mouths of patients with diphtheritic throats, but he could not recover them after twenty-four hours.

Our swabs from a diphtheritic throat simulated a direct contamination of objects with infected material. The swabs were taken liberally from the membrane, which was made to bleed. Cotton might rather increase than lessen the resistance of the germs in drying. The swabs were kept in tubes, and sunlight was not admitted. In spite of all that, the diphtheria organism disappeared on the fourth day. Its companion, the less harmful staphylococcus, persisted a few days longer, as it always does.

Our pure organisms taken rather sparingly from a one-day growth on two culture tubes, survived for as long as seven days on glass and wood, eleven days on cotton and thirteen days in a Petri dish.

The pure culture organisms showed a viability four times greater than the organisms from the throat. In attempting to explain the difference, a few points suggest themselves. In dipping material into an emulsion of pure organisms, we are certain to get many times the number of organisms that can be picked from a throat that allows a relatively greater dilution and a larger surface for the spreading of the number of germs present. Also the pure organisms enjoy less competition in utilizing the minute amount of food material that is usually carried over from the emulsion or suspension to the inert object, while the throat secretions contain two or three kinds of organisms that are less sensitive to unfavorable media than diphtheria.

Of course, it is impossible to reach definite conclusions after so limited an amount of work, and this work merely serves to emphasize the fact that the laboratory may not always simulate the sick room, and that apparent reasoning by analogy may in this particular case lead to false conclusions.

It seems that the work should be directed toward actual experimentation on pathological throat secretions. Where material is available, extensive investigations could be carried on. The results then might have some bearing on the question of contagion,

which so greatly concerns the sanitarians of today.

3211 West Colfax Avenue.

News Notes

The El Paso County Medical Society has endorsed the Kent Bill, now before Congress, providing for federal aid in respect to tuberculosis. To overcome a feature of the bill which was recently protested against by the Medical Society of the City and County of Denver, the El Paso Society has suggested to Congressman Kent that the proposed federal subvention shall continue as long as the indigent tuberculosis person continues in the hospital or sanatorium to which he has been admitted under the act.

Dr. O. M. Gilbert spoke on "Diagnosis of Tuberculosis" as a guest of the Alabama State Medical Association at its annual convention in Mobile.

Dr. Charles J. Howard has left Victor for Pueblo, where he will supervise the sanitarium popularly known as Clark's Wells.

Speaking from the pulpit at the First Baptist Church in Pueblo on Hygiene and Sanitation, Dr. R. W. Corwin recently declared that a South African Hottentot was more modest in his or her wearing apparel than the girls who dress according to modern fashion.

The twelfth annual meeting of the National Association for the Study and Prevention of Tuberculosis was held in Washington, D. C., on Thursday and Friday, May 11th and 12th. Dr. Livingston Farrand, President of the University of Colorado, was chairman of the Advisory Council of the association. Dr. Gerald B. Webb of Colorado Springs was chairman of the Pathological Section, and also with Drs. A. M. Forster and S. W. Houck of Colorado Springs read a paper on "Rest of the Individual Lung by Posture" in the clinical section. Among those who discussed the subject of interstate control of the tuberculosis problem were Miss Gertrude Vaile of the Denver Department of Social Welfare and Dr. Livingston Farrand.

The new volume by Fishberg on Pulmonary Tuberculosis, just published, contains on pages 18 and 19 a fairly detailed reference to Dr. C. N. Meader's work with regard to the Much staining method in tuberculosis.

Dr. E. S. Pratt was in Denver during the week from April 11th to 18th.

Dr. C. E. Tennant was operated upon in the evening of April 20th by Dr. Leonard Freeman, assisted by Dr. W. M. Wilkinson, for acute sigmoid diverticulitis. Dr. Tennant was making a good recovery, but has since been quite seriously ill from a complication which followed his operation.

Dr. and Mrs. P. D. Rothwell are taking a six weeks' vacation in southern California.

The Federal Trade Commission has recently made a preliminary report to Congress on the rise in the price of gasoline, in which physicians are extensively concerned. It finds that the production of crude oil remained virtually stationary; that the gasoline contents of crude oil decreased; that exports of gasoline increased from 188,000,000 gallons in 1913 to 238,500,000 gallons in 1914, and 284,500,000 gallons in 1915, and that for its 62 per cent of the gasoline produced, the Standard Oil Company charged about one cent a gallon less

than the "independents" charged for their 38 per cent.

Seventy-six out of eighty-seven cases of typhoid fever in a recent outbreak were traced by the United States Public Health Service to infected milk. Prompt reporting of the first cases to a trained health officer would have rapidly ended the epidemic.

Dr. C. A. Bundsen has recently returned from a voyage to Europe.

Among those who went East to attend the various medical meetings were Dr. Edward Jackson, who attended the American Ophthalmological Society in Washington; Dr. Leonard Freeman, the American Surgical Association in Washington; and Drs. Carmody and Levy, the "Triological" Association at White Sulphur Springs, Virginia.

Dr. S. D. Childs is away on a six weeks' visit to California.

Dr. Crum Epler, secretary of the Colorado State Medical Society, writes to say that the best rates published by the railroads, and available in connection with the annual meeting of the Colorado State Medical Society in Glenwood Springs next September, are the party fares providing for three or more persons on one ticket on the going trip, separate tickets being issued if desired for the return trip. On these tickets, the fare from Pueblo or Colorado Springs to Glenwood Springs and return will be \$9.00 per capita, and from Denver \$10.00 per capita. Tickets at this rate may be obtained at the offices of the Denver & Rio Grande, the Colorado Midland, the Colorado & Southern, and the Santa Fe railroads.

In connection with the meeting of the American Medical Association in Detroit, the Santa Fe Railroad Co. writes that for a sufficient number traveling from Colorado, it will make up a special sleeping car, which will be attached to the American Medical Association special at Kansas City, and will go through to Detroit without change.

On account of the growing importance of the movement for health insurance in this country, the American Medical Association has recently organized a committee of social insurance with Dr. Alexander Lambert of New York City as chairman, and I. M. Rubinow as executive secretary.

We did not learn until too late for mention in the April issue that Dr. and Mrs. O. M. Gilbert, of Boulder, were welcoming a new visitor in the form of a baby boy who was born at the University Hospital on April 6th.

Dr. F. McClure, Salida, recently escaped with some cuts and bruises and a severe shaking up when the steering gear of his automobile broke and the machine turned a series of somersaults on the road from Salida to Wellsville.

The forty-first annual meeting of the American Academy of Medicine will be held at the Hotel Statler, Detroit, on June 9-12, 1916. The subjects under discussion will include "Prison Reform" and "Legislation and Medicine".

Dr. Carl G. Parsons writes from Los Angeles that he has already gained about thirteen pounds in weight, and that the condition of his larynx is greatly improved.

The Association of Military Surgeons of the United States announces that beginning with the April issue the "Military Surgeon" will appear in very greatly enlarged form and improved appearance. The editor is Lieutenant Colonel E. L. Munson, Medical Corps, U. S. Army.

Dr. O. S. Fowler has been east for some time on a visit to Chicago (where he did some work with Dr. Harris on local anaesthesia), and in

attendance at the annual meeting of the American Urological Association in St. Louis.

El Paso County Notes.

Dr. L. H. McKinnie is on a visit to Rochester, Minn., and Chicago, and will be a delegate to the A. M. A. meeting at Detroit, Mich.

Dr. C. O. Giese and wife are visiting their former homes in Iowa.

Dr. H. W. Swan and Dr. C. F. Gardiner are attending the American Climatological Society meeting at Washington, D. C. Dr. Swan will also attend the A. M. A. meeting.

Dr. H. W. Hoagland is visiting Philadelphia, New York and Washington, D. C.

Dr. Edward Moore has recovered from his recent illness and is again on duty at "Star Ranch in the Pines".

Dr. J. J. Mahoney has been laid up for a while on account of illness.

Dr. H. C. Moses and family will visit their former home in Ohio, and will motor back from Detroit, where the doctor will attend the meeting of the A. M. A.

Dr. G. B. Webb is on a trip to Rochester, Minn., Saranac Lake, and Washington, D. C.

Dr. J. H. Madden and wife are taking a month's vacation on the Pacific coast.

Dr. J. A. Patterson and family are spending several weeks visiting in the East.

Medical Societies

CITY AND COUNTY OF DENVER.

The regular meeting of the **Medical Society of the City and County of Denver** was held April 18, 1916, President Dr. Henry Sewall in the chair.

Dr. Frederick A. Tower was elected to membership in the Society.

The applications of Dr. Lida B. Russell and Dr. Samuel Goldhammer were received.

The scientific program: Rest of Individual Lung by Posture, Gerald B. Webb, M.D., Colorado Springs; One and One-half Years' Experience With Much's Tuberculin in the Treatment of Tuberculosis, S. Simon, M.D.

C. F. HEGNER,
Reporter.

The regular meeting of the **Medical Society of the City and County of Denver** was held on May 2, 1916, President Dr. Henry Sewall in the chair. Dr. Samuel Goldhammer was elected to membership in the Society.

Resolutions on the death of Dr. Mary Hawes were read.

Dr. Hillkowitz, in discussing the activities of various cults as evidenced by numerous articles in the lay press wherein the medical profession and the science of medicine are placed before the public in an unfavorable light, moved that a press committee for medical publicity be appointed by the chair. The motion was unanimously carried. President Sewall appointed Drs. Hillkowitz, Elder and Van Zant as the press committee on medical publicity.

The scientific program: Tonsil and Tonsil Technique, T. E. Carmody, M.D., elicited an animated and quite general discussion. Dr. James Rae Arneill reported an interesting case of congenital pyloric stenosis.

C. F. HEGNER,
Reporter.

Resolutions on the Death of Dr. William Rodman, Offered and adopted by the Medical Society of the City and County of Denver, Tuesday, April 4, 1916.

Whereas, Dr. William L. Rodman, late President of the American Medical Association, died at his home in Philadelphia on March 8, 1916, after a brief illness from pneumonia; and,

Whereas, By his unselfish and distinguished services to the cause of medical education and the highest ideals and best interests of the profession, and notably as the founder and zealous advocate of a national board of medical examiners, he won the universal appreciation and regard of the profession; while by his special contributions to the surgical diseases of the breast and the stomach he gained international fame as a surgeon; therefore, be it

Resolved, by the Medical Society of the City and County of Denver, that we hereby express our sincere sorrow at his death;

Resolved, That his death in the prime of a successful professional career is a distinct loss to the American Medical Association and to the surgical profession of our day in both the civil and military life of the country.

Resolved, That we tender to the bereaved family our deep sympathy in this sad hour.

Resolved, That a copy of these resolutions be sent to his family.

W. W. GRANT,
HENRY SEWALL,
WM. C. BANE.

EL PASO COUNTY.

The regular monthly meeting of the **El Paso County Medical Society** was held April 12, 1916. The president, Dr. G. A. Boyd, presided. There were fifty members and six visitors present.

The library committee made a report as to bookcases for the library. It was moved, seconded and carried that the library committee act in conjunction with the executive committee and procure the necessary cases at once.

The following applications for membership in the Society were read and referred to the executive committee: Drs. T. B. Knowles, C. E. Richmond, A. F. Swan, and A. E. Smith.

Dr. Hanford presented a resolution in support of the Kent bill now before Congress, which resolution was adopted.

A report of the work being done by Miss Harris along the line of invalid occupation work was read, and the following committee was appointed to bring before the society the facts in regard to the work: Drs. Giese, Hanford and Stevens.

Clinical Cases. Dr. McKennie reported a case (showing the patient and X-ray pictures) in which four years ago he had removed the entire right tibia on account of osteomyelitis. The patient made a perfect recovery.

Drs. Crouch and Downing reported a case of carcinoma of the lung, showing the pathological specimens.

Dr. Downing showed the internal organs of a rattlesnake, in which he had injected tubercle bacilli. The snake died in eight months, the organs showing tubercles, which injected into a guinea pig caused death from tuberculosis.

Specimens of a carcinoma of the lesser curvature of the stomach of a man aged 55 who had died of a gastric hemorrhage, after having had gastric symptoms for a short while only, were shown by Dr. Gilmore.

Dr. McClanahan showed an appendix in which

there was an enterolith resembling an olive seed.

Program. Contracted Pelvis, Dr. Tucker; discussion, Drs. Timmons, Morrison, Noble, C. R. Arnold and McClanahan. Bone Carpentry, Dr. McKinnie; discussion, Drs. Loomis and Lennox.

G. B. GILMORE,
Secretary.

LARIMER COUNTY.

The **Larimer County Medical Society** met in regular session in the Y. M. C. A. Building, Fort Collins, Wednesday evening, April 6, 1916.

Dr. Dale showed an X-ray plate of a subglenoid luxation of the humerus. Dr. Stuver exhibited some fetuses in various stages of development from his collection.

Drs. A. R. Scott of Berthoud, R. L. Gleason of Wellington and J. R. Schofield of Fort Collins were elected to membership.

T. C. TAYLOR,
Secretary.

NORTHEAST COLORADO.

The **Northeast Colorado Medical Society** met in regular session at the City Hall in Sterling on April 5th, 1916, President Dr. J. K. Dawson presiding.

The Hospital Building Committee made its report.

A paper was read by Dr. M. L. Babcock on Acute Mastoiditis, and cases reported. Discussed by Drs. Chipman, Barney, Dawson and Naugle.

M. L. BABCOCK,
Reporter.

PUEBLO COUNTY.

The **Pueblo County Medical Society** met in regular session, March 21, 1916, President Marmaduke presiding.

Dr. W. F. Rich presented an excellent paper on Pyelitis, paying particular attention to the pathology and symptoms. Many of those discussing the paper expressed disappointment that Dr. Rich did not present anything on treatment.

The committee on clinics gave a short report on their plans. A motion prevailed that the committee should make their report more in detail and that it should be printed and a copy sent to each member and a time set by the Society for discussing this report.

The application of Dr. Nicoletti was read and referred to the membership committee.

The president was instructed to appoint a committee to draft resolutions on the death of our late member, Dr. W. L. Dorland. On this committee were appointed Drs. Stoddard, Corwin and J. A. Black.

A communication of Dr. John Wolf of the city health department regarding an ordinance regulating the storage of biological products by drug houses was read, and the Secretary was instructed to transmit to Dr. Wolf an endorsement of this ordinance.

J. H. WOODBRIDGE,
Secretary.

The **Pueblo County Medical Society** was called to order in regular session by President Marmaduke April 4, 1916.

Dr. W. T. H. Baker presented the paper of the evening, subject "Diagnosis of Surgical Conditions of the Upper Abdomen". The subject was a quite large one, but was very concisely and

ably presented by Dr. Baker. It was an excellent paper and worthy of study.

The Membership Committee reported favorably on the application of Dr. Nicoletti.

The committee appointed to draft resolutions on the death of our late member, Dr. W. L. Dorland, made the following report:

Resolutions on the Death of Dr. W. L. Dorland.

Whereas, The Pueblo County Medical Society has had removed from its membership, by the great Master of Ceremonies, Doctor W. L. Dorland who was an active member for the past thirty years, we, the remaining members, wish to bear testimony to his faithful attendance at our meetings and his active cooperation in everything tending to the betterment of the Society and the profession. He was always ready when called upon for a paper and never failed to take part in the discussions of papers or subjects which came before the Society. He was honest and clear in his convictions and honorable in his dealings with his fellow practitioners.

Therefore, it is resolved by The Pueblo County Medical Society that we deplore the loss of such an active and valuable member and we extend to his sorrowing family and friends our most sincere sympathy in their bereavement.

It is further resolved, that these resolutions be spread upon the Pueblo County Medical Society's records and that a copy of these resolutions be sent to Doctor Dorland's family and Colorado Medicine.

T. A. STODDARD, M.D.

R. W. CORWIN, M.D.

J. A. BLACK, M. D.

This report was adopted.

Dr. Hubert Work was unanimously elected as delegate from this society to the next meeting of the Colorado State Medical Society.

It was moved and carried that the President appoint a committee to submit an amendment to the by-laws revising that part regarding the payment of dues, which did not conform to the by-laws of the State Society.

J. H. WOODBRIDGE,

Secretary.

The Pueblo County Medical Society met in regular session April 18, 1916, President Marmaduke in the chair. W. T. H. Baker was chosen Secretary pro tem. in the absence of J. H. Woodbridge.

Dr. Nicoletti was elected a member of the Society.

The paper of the evening was then read by Dr. C. W. Thompson. He chose "Dementia Praecox" as being one of the "Commoner Forms of Insanity" which had been assigned as a topic by the Program Committee.

Dr. Thompson's paper was excellently prepared, well presented and instructive. Discussion was opened by Dr. Hunnicutt and he was followed by J. A. Black, H. A. Black, Harold Low, M. J. Keeney, E. A. Elder, Carl Maynard, Crum Epler and President Marmaduke.

President Marmaduke announced J. E. Peairs, R. C. Robe and J. H. Woodbridge as a committee to revise the by-laws.

Dr. Robe, the only member of the committee

present, stated that the committee would be pleased to secure any suggestions from the members of the Society.

W. T. H. BAKER,

Secretary pro tem.

WELD COUNTY.

The Weld County Medical Society met in the office of Dr. Ella Mead Thursday evening, April 20th, for its regular meeting.

Dr. Thompson reported a serious labor case complicated by nephritis; also a fatal case of coma. Both were discussed by the society.

Dr. Ella Mead, recently returned from New York, where she had been taking post graduate work, told of some bacteriological work which was being done, making special mention of the Schick test for diphtheria. This was followed by an animated discussion.

ELLA A. MEAD,

Reporter.

COLORADO OPHTHALMOLOGICAL SOCIETY.

The Colorado Ophthalmological Society met at Dr. E. E. McKeown's office, March 18, 1916, Dr. G. L. Strader presiding.

It was decided to hold the Colorado Ophthalmological Congress on August 1st and 2nd, 1916.

Dr. A. C. Magruder presented a patient showing an opacity in the lens, or posterior capsule, ring-shaped, from trauma.

Dr. E. E. McKeown presented a patient in whom the X-ray had shown a foreign body in the vitreous.

Dr. W. C. Bane exhibited a patient showing most excellent results from operation for symblepharon.

Dr. G. L. Strader presented a patient with optic nerve atrophy the result of the ingestion of wood alcohol.

Dr. E. T. Boyd had a patient present in whom a blow from a stick had dislocated the lens.

E. T. BOYD, Secretary.

SOPLY TUBERCULOSIS SOCIETY.

The regular meeting of the Solly Tuberculosis Society was held at the El Paso Club in Colorado Springs, on April 4th, 1916, at 12:30 o'clock, following the luncheon.

A committee, consisting of Drs. Jos. Wallace and H. Trossbach, (the Secretary) was appointed to draw up resolutions regarding the death of Dr. Theodore Sachs, and to send a copy to the Medical Society of Chicago and to Dr. Sachs' family.

It was also voted that hereafter the meetings of this Society begin at 12:30 o'clock instead of at 12:00 o'clock noon.

Program:

Dr. D. P. Mayhew presented a discourse on Rectal Ulcerations, which was discussed by Drs. Lennox, Martin and Swan.

Dr. Frank T. Stevens presented a discourse on Tuberculous Meningitis, which was discussed by Drs. Giese, Neep, Gilbert, Wallace and Swan.

The next regular meeting of this Society will be held in October, 1916.

H. TROSSBACH,

Secretary.

Book Reviews

Pulmonary Tuberculosis. By Maurice Fishberg, M.D., Clinical Professor of Tuberculosis, University and Bellevue Hospital Medical College; Attending Physician, Montefiore Home and Hospital for Chronic Diseases, New York. Octavo, 639 pages, with 91 engravings and 18 plates. Cloth, \$5.00, net. Lea & Febiger, Publishers, Philadelphia and New York, 1916.

This book by Maurice Fishberg attempts to put before the general profession, in a clear, concise, and thorough way, the views at present held by special workers in the field of tuberculosis.

As the introduction states, the tuberculosis problem cannot be solved by sanatoria, but must be solved in the patient's home. The prime object of the book is to place clearly before the family physician the great responsibility that rests on his shoulders in the diagnosis and treatment of tuberculosis.

All the sections of the book show the author's painstaking search into the literature of the subject; a fair attempt to weigh the evidence and then a statement of his personal convictions.

In the chapter devoted to climatic treatment, there is an unbiased attempt to bring out the points advanced by those favoring climatic treatment. Although the conclusions reached would hardly be acceptable in Colorado, we cannot but admire the attempt made to clearly bring out disputed points and to clarify the whole situation.

In the chapter on exercise, the following statement is evidently the result of long and trying experiences: "It was one of the great mistakes of many sanatoriums to urge all patients to keep at perfect rest and abstain from work or exercise. . . . The result was that they turned out lazy people—hypochondriacs—who feared work, and who at the least fatigue considered themselves harmed by it."

In the chapter on marriage of the tuberculous, a rather bold and unjustified stand is taken. "Married tuberculous women are therefore to be given detailed instruction on the proper methods of prevention of conception. If they become pregnant, the induction of abortion is indicated and justified."

Perhaps years of bitter experience amongst the poor in New York City have led to this radical solution of a difficult problem. Such a solution would hardly meet with favor in Colorado and it would have been wiser to modify the statement. To say the least, it is dangerous teaching.

The chapter on pneumothorax treatment is a thorough, up-to-date presentation of the subject and should be read by all those who are carrying out this efficient method of treating some of the cases of tuberculosis.

The work throughout impresses one as a labor of love. A fine sympathy for the sufferer, a realization of the physician's responsibility, and thorough appreciation of the community's inefficient attempts at solving the tuberculosis problem give the work a place in the library of all up-to-date physicians.

A. S. T.

A Text-Book of the Practice of Medicine. By James M. Anders, M.D., Ph.D., LL.D., Professor of Medicine and Clinical Medicine, Medico-Chirurgical College, Philadelphia. Twelfth Edition Thoroughly Revised. Octavo of 1,336 pages, fully illustrated. Philadelphia and London: W.

B. Saunders Company, 1915. Cloth, \$5.50, net; half morocco, \$7.00, net.

The twelfth edition of this well-known textbook includes a large amount of new matter. In the revision, which has been thorough, the sections on colon bacillus infections, splenomegaly and tuberculosis of the thyroid, are all new to the work. Many of the subjects have been partly rewritten and many important additions have been made. Schick's test for antitoxin in the blood in diphtheria, the complement-deviation test in pertussis, neosalvarsan and the phenolsulphonephthalein test in nephritis, are some of the more important sections which have been rewritten.

The general arrangement of the material is slightly different from that of other texts. The pathology of a disease is placed before the etiology. Under the special etiology, bacteriology is prominently emphasized. In many sections, the differential diagnoses are tabulated, which will undoubtedly appeal to many of the book's readers. Some fifty-six diagnostic tables are found in the work, largely original with Dr. Anders.

The revision of the section upon nervous diseases has been in charge of Dr. Charles S. Potts. Many of the articles upon the diseases of children have been written by Dr. W. C. Hollopeter.

W. W. J.

The Practical Medicine Series. Volume 1: General Medicine; edited by Frank Billings, M.S., M.D. Series 1916. The Year Book Publishers, Chicago. Price, \$1.50.

This volume deals with various infectious diseases; diseases of the chest, heart, blood vessels, blood and blood making organs, ductless glands, kidneys, metabolic diseases and carbon monoxide poisoning. Tuberculosis is mentioned at length and with numerous explanatory remarks concerning the latest thought and experience with this disease. Foot and mouth disease, relapsing fever, pellagra, and glanders are variously dealt with. The chapter on blood pressure seems to be a valuable condensation of a much-discussed question. Two or three pages are well given over to the technique of blood cultures, a most important desideratum.

Functional tests in determination of the part of the kidney diseased, the value of functional tests, and the estimation of functional activity are valuable additions to this volume.

For a practical hand-book which can be used for ready reference upon points which are not generally known, this sort of series fills a want in the profession.

R. H.

A Treatise on Medical Practise (Non-medical Therapy). By Otto Juettner, A.M., Sc.M., Ph.D., M.D. Published by A. L. Chatterton Co., New York, 1916. Price, \$5.00.

"The Practice of Clinical Medicine Based on the Art and Science of Non-medical Therapeutic Methods" is the sub-title to this volume of some five hundred odd pages. The book is large and printed on a light weight paper, not especially well bound and lacking in a systematic classification of subjects. Each disease or article is placed according to its alphabetical listing without any regard to the subject matter, thus Locomotor Ataxia is preceded by Lithemia and followed by Malaria. The great majority of subjects found in a general treatise on medicine are also mentioned in this work, with additional articles on Massage, Physical Culture, Galvanism, Vibration, Dietetic Therapy, Light as a thera-

peutic agent, and other non-medicinal topics. The title speaks for the nature of the treatise. It is purely non-medicinal and embraces all of the means of treatment at the disposal of any school of practitioners save drugs and vaccines.

Appendicitis, as an example which can be included under both medicinal and surgical treatment, is here dealt with by means of the poultice, hot pack and Minin light or any other form of heat. The bowel is thoroughly cleansed, by what means the author does not state, and feeding is stopped, but ice is by no means used because it prevents repair. If the case should grow worse locally or generally, then it would become a surgical problem from the development or presence of pus. Prophylaxis is very important in the way of keeping the bowel "physiologically" clean, also outdoor exercise, applications of high frequency current, and vibration over the dorsal spine.

Diphtheria is treated "symptomatically," antitoxin not being mentioned; syphilis and malaria in like manner. Music as a therapeutic agent furnishes an interesting article.

Whether or not Dr. Juettner adheres to the purely physical methods of treatment cannot be said, but from his book on medical practise it must be inferred that he advises this plan, because nowhere is there mentioned as an auxiliary in the treatment of disease the use of drugs, and he does mention surgical intervention as a means of help if we except physical methods.

Taken as a whole this work is worth the attention and thought of medical men, because it does contain much valuable advice and sensible application, but in the hands of an inexperienced physician who cannot be guided by a well-balanced judgment, such a volume would work harm. The idea of the author is no doubt to put before the profession that great field of usefulness which is available in many physical methods when treating disease, but in the opinion of the critic the danger lies in not including the facts of experience in certain drug applications, and in lack of reference to the advisability of combining all the known agents at our command in a sensible and logical manner.

R. H.

The Medical Clinics of Chicago. Volume 1, Number V (March, 1916). Octavo of 220 pages, 67 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Published Bi-Monthly. Price per year: Paper, \$8.00. Cloth, \$12.00.

This number introduces Dr. James T. Case, who gives a Lantern Slide Clinic on Roentgenologic Aspects of Intestinal Stasis. He emphasizes that alimentary stasis and intestinal toxemia are not synonymous phrases, because there are certain normal delays in the passage of food, not only at the pylorus, but also in the terminal ileum, and in the transverse and pelvic colons. Case shows the frequency of prolapsus in healthy individuals, describes the several rhythmic zones in the intestines, and tells of the value of stereoscopy over roentgenograms for thorough study of the viscera. His most frequent finding in constipated individuals is marked spasticity of the left half of the colon. This spasticity is very often associated with adhesions, which adhesions are demonstrable in various ways, occasionally by roentgenograms but more reliably estimated by inability to move this portion of the bowel by manipulation under the fluorescent screen. The stasis in these cases does not occur in the colon just proximal to the spastic adherent portion, but

away back in the cecum, and ascending colon, with evidences of chronic peri-appendicular adhesions sometimes producing a Lane's kink. Ileocecal valve incompetency is often due to antiperistalsis of the ascending colon. Multiple diverticula often may cause constipation.

R. G. P.

Elementary Bacteriology and Protozoology. For the Use of Nurses. By Herbert Fox, M.D., Director of the William Pepper Laboratory of Clinical Medicine in the University of Pennsylvania. Second Edition, Revised and Enlarged. 12mo, 251 pages, with 68 engravings and 5 colored plates. Cloth, 1.75, net. Lea & Febiger, Philadelphia and New York, 1916.

This addition to the Nurses' Textbook Series will prove a very valuable aid in the field for which it is intended. It is most necessary that nurses should have an elementary knowledge of bacteria in their relation to the human body. In reviewing this work one is struck with the lucid manner in which the subject is presented. Readers, no matter how inexperienced they may be, will be able to understand it. The chapter on "Practical methods of sterilization and disinfection" is most thorough and practical. We are particularly impressed with the chapter which sets forth "Methods of procuring specimens for bacteriologic and other examinations", in which field nurses can be of great assistance to physicians.

W. B.

New and Non-Official Remedies, 1916. Containing Descriptions of the Articles Which Have Been Accepted by the Council on Pharmacy and Chemistry of the American Medical Association Prior to January 1, 1916. Chicago: American Medical Association.

The establishment by the American Medical Association, in 1905, of the Council on Pharmacy and Chemistry marked an important epoch in the protection of the medical profession against more or less fraudulent proprietary medicines. Articles placed on the market are examined by the Council as to their compliance with definite rules designed to prevent fraud, undesirable secrecy, and the abuses derived from advertising directly or indirectly to the laity. Those articles which appear to conform with the rules are accepted, and their essential features are described in this volume. In the present list a number of preparations recorded in the previous volume have been omitted, for various reasons. There has been considerable revision in the descriptions of the physical and chemical properties and the tests for the identity and purity of the various substances described in N. N. R. Other important changes have also been made. To the conscientious prescriber the possession of this book is almost an essential for the practice of medicine. A particularly useful section is that of serums and vaccines.

Health First.—A recent editorial in the New York Tribune emphasizes the economic advantages which are likely to result from the new movement for compulsory health insurance. The Tribune suggests that, just as compensation for industrial accidents gave rise to a campaign for "Safety First," so the establishment of health insurance will create a movement for "Health First." "Employers will learn that their business methods are susceptible of improvement to lessen sickness and disease among workers".

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The Relation of Scholarship to Partial Self-Support in College.—The paper by Albright, recently issued as a Colorado College publication, studies the effect on scholarship of the time devoted by many students to supporting themselves financially while in college. The general result of the investigation seems to be that as regards those students who devote a moderate number of hours to work outside the college course, the loss of time for study is about compensated for by the increased seriousness of purpose of the self-supporting student.

THE COLORADO STATE MEDICAL SOCIETY.

(Incorporated November 1, 1888.)

The Next Meeting Will Be Held in Glenwood Springs,—September 5, 6 and 7, 1916.

OFFICERS, 1915-1916.

President, John R. Espey, Trinidad.

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Committee of Arrangements for 1916 Meeting, W. W. Crook, W. W. Frank, and J. P. Riddile, Glenwood Springs.

Committee to Revise By-Laws, W. A. Jayne, Denver; L. H. McKinnie, Colorado Springs; H. A. Black, Pueblo.

Workmen's Compensation Acts, H. R. McGraw, Denver; S. D. Van Meter, Denver; D. P. Mayhew, Colorado Springs.

First Aid, Aubrey H. Williams, Denver; F. H. McNaught, Denver; C. B. Lyman, Denver.

Study and Control of Cancer, T. A. Stoddard, Pueblo; J. G. Hughes, Greeley; T. M. Burns, Denver.

Medical Defense, H. G. Wetherill, Denver; M. J. Keeney, Pueblo; Crum Epler, Pueblo.

Constituent Societies and Times of Meeting and Secretaries.

Bent County, first Tuesday of each month; P. A. Leedham, Las Animas.

Boulder County, every Thursday; C. L. La Rue, Boulder.

Crowley County, second Tuesday of each month; E. O. McCleary, Ordway.

Delta County, last Friday of each month; W. Scott Cleland, Delta.

Denver County, first and third Tuesday of each month; H. R. Stilwell, Denver.

El Paso County, second Wednesday of each month; G. B. Gilmore, Colorado City.

Fremont County, fourth Monday of January, March, May, July, September and November; R. C. Adkinson, Florence.

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COLORADO MEDICINE

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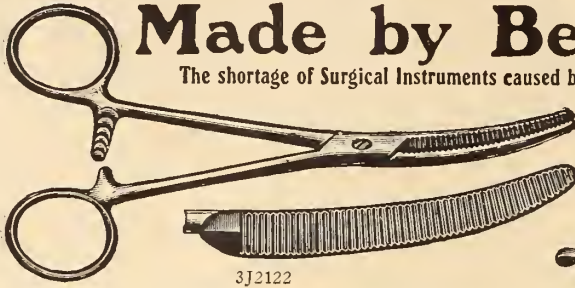
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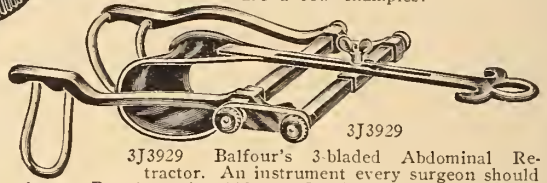
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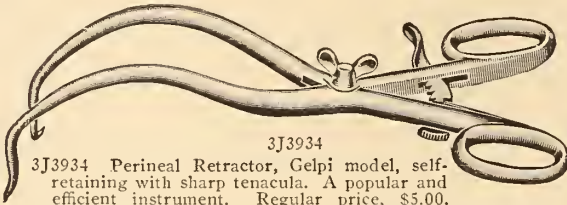


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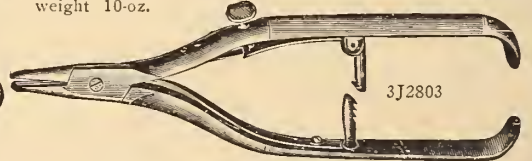


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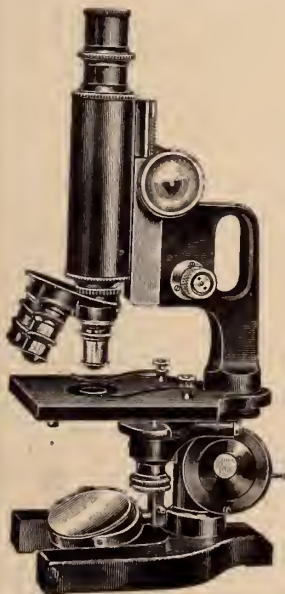


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THE ANNUAL MEETING.

SOMETIME THIS MONTH THE PROGRAM COMMITTEE OF THE STATE SOCIETY WILL HOLD A MEETING AT WHICH THE PROGRAM WILL BE ARRANGED. A FEW OF THOSE MEMBERS OF THE SOCIETY WHO HAVE GIVEN IN THEIR NAMES FOR THE READING OF PAPERS AT GLENWOOD SPRINGS HAVE NOT YET FURNISHED ABSTRACTS OF THEIR PAPERS. IT IS NECESSARY THAT THIS MATTER SHOULD BE ATTENDED TO AT ONCE. ABSTRACTS SHOULD BE FORWARDED TO DR. CRUM EPLER, SECRETARY OF THE STATE SOCIETY, AT PUEBLO.

Editorial Comment

THE FLY AS DISEASE CARRIER.

From a broader study of bacteriology, we are rapidly learning that some of the smaller pests of man, which were formerly disliked and avoided by him merely because of the temporary discomfort and annoyance which they produced, are and have been among the deadliest enemies of the human race. Thus we are now certain that malaria and yellow fever, which were formerly regarded as due to mysterious emanations from the soil, or to corrupt humors in the winds of heaven, would never be inflicted upon mankind but for the bite of one or other of several kinds of mosquito. The louse has been rather definitely accused of responsibility for the transmission of typhus, and it seems that the wood tick must take the blame for conveying the disease known as Rocky Mountain

spotted fever. But, in spite of the part played by the mosquito in malaria and yellow fever, and possibly in some other diseases, its importance as a natural enemy of man is apparently not equal to that of the fly. According to Sweet (Supplement No. 29 to the Public Health Reports, 1916), "if a careful summary be made of the activities of both flies and mosquitoes, the former . . . will necessarily be rated as the more harmful and dangerous". It is probably only a few years since most of us paid very little attention to the fly as an agent in the spread of disease. Today, in many of the large cities of this country, concerted action is already being taken to do away with the fly nuisance.

Of the many varieties of flies, but few can compete with the mosquito in their capacity for direct inoculation of disease; for the simple reason that most of them are not provided with weapons capable of penetrating the human skin. One notable exception to this rule is the tsetse fly of Africa, to which is due the transmission of sleeping sickness, a fatal disease found in certain parts of that continent. A close relative of the tsetse fly, and one of much wider distribution, is the well known stable fly, whose bite many of us have experienced.

The importance of the fly as a carrier of disease depends upon his feeding habits, his anatomical structure, and certain peculiarities of his digestive process. He shows on the one hand a great fondness for various articles of human diet, and on the other hand is invariably attracted by organic filth, either in the form of decaying refuse, or of the fecal discharges of man or animals. His legs and wings, the former of which are thickly covered with hairs, are admirably

adapted for carrying minute particles of filth to the human food over which he later crawls in a persistent and discriminating search for palatable morsels. To the esthetic sense alone it is sufficiently repulsive to think of the fly's previous whereabouts whenever we see him sojourning upon meat, fruit, bread, sugar, or other articles intended for our own consumption. But the esthetic view of the matter is trivial compared with the actual danger involved. Not only does the fly distribute filth by mere bodily contact, but it has the habit of regurgitating or vomiting its food from a temporary receptacle known as a crop.

Most of us are aware of the part played by the fly in the transmission of typhoid fever, which was so distressingly manifested by the death from that disease of many hundreds of United States soldiers during the war with Spain. The fly is probably also guilty of conveying a good many of the gastro-intestinal infections which are so common in children during the summer months, and no community which neglects the fly pest can be regarded as giving proper attention to the reduction of infantile mortality.

The fly is a prolific breeder, only eight or ten days being normally required for the maturing of a new generation, and as many as one hundred eggs being deposited at one time by the female of the species. In the country districts especially, the favorite breeding place is a heap of horse manure. Breeding can be prevented by removal of the manure twice a week; and where this cannot be conveniently done, the manure should be properly screened. A successful means of destroying the larvae of flies has been found in the shape of a trap composed of narrow slats of wood with spaces in between, and a tank of water beneath. Manure is sprinkled on the slats, and after the larvae are hatched from the eggs, their tendency to extensive migration causes them to fall between the slats into the water, where they are drowned.

The fly exemplifies the truth that prevention is better than cure, for no amount of swatting is so effective as destruction of breeding places, or the trapping method above referred to.

HEALTH INSURANCE.

In the forty-eight distinct but contiguous states of this union, legislation has a tendency in many instances to proceed somewhat in the manner of an epidemic. While the more conservative eastern states have escaped such radical infections as woman suffrage, the initiative and referendum, and the recall, those older states, with their proportionally large industrial population, have in some instances led the west in labor legislation. When change occurs, even along quite important lines, reforms which a few years ago would have aroused bitter controversy sometimes creep in upon us almost as little noticed as the proverbial thief in the night. Comparatively little excitement was caused, for example, by the recent enactment in Colorado of rather sweeping measures for compensation against industrial accidents.

A more or less authoritative report presented to the board of directors of the National Association of Manufacturers two years ago expressed a positive opinion that sickness insurance would be enacted into law by many states of the union within the next five years. It seems hardly probable that any large area of this country will greatly delay in following the example set by such European countries as Germany and England in this important matter. The committee on Social Insurance of the American Association for Labor Legislation, in laying before the American public its "Standards and Tentative Draft of an Act" for health insurance, expresses the opinion that "legislation on a subject of such far-reaching importance should be preceded by careful consideration from all elements of society interested; not general discussion merely, but an examination of the effect of a definite plan on particular interests and particular situations. The interested observations of employers, workmen, and members of the medical profession are especially important." In discussing the plan for health insurance adopted by the English parliament several years ago, the medical profession of Great Britain took sides very keenly. But whatever one's private view of the matter, the establishment of some

scheme of compulsory health insurance throughout the civilized world is now a matter of practical certainty; so that physicians should take a definite part in seeing that the new laws contain provisions which, so far as possible, harmonize the needs of employes with justice to the physician.

According to the pamphlet issued by the Committee on Social Insurance, careful estimates have shown "that 3,000,000 persons in the United States are sick at any one time, that each of our 30,000,000 wage-earners loses on an average approximately nine days from this cause yearly, that the cost of medical treatment is \$180,000,000 yearly, and that the resulting annual wage loss amounts to \$500,000,000". The United States Emigration Commission of 1909 declared that sickness was the apparent cause of poverty in 38 per cent of the 31,481 charity cases studied by the commission. Not only, however, is compulsory health insurance to be seriously considered as an economic need of the laboring class, but it also plays an important part as a preventive measure against disease; its action in this direction being analogous to the effect produced by compulsory accident insurance in stimulating the movement for "safety first".

INFANT FEEDING.

Infant feeding is attracting the attention of those working on the problems of metabolism as well as clinicians. Many radical changes have been made in methods of feeding, and there have been still more radical changes in our views as to the causes of acute digestive troubles in infants.

The Archives of Pediatrics (vol. 33, No. 1) recently contained a series of articles on infant feeding which had been read in a symposium on "Modern Infant Feeding".

The first article was by F. W. Howe, who dealt with the chemistry of infant foods. Howe says that the bacteria may be divided roughly into the fermentative and putrefactive types, and that "under natural conditions fermentative actions almost invariably precede putrefactive actions. This being true, the souring of milk coming first gives us, as Prof. Sedgwick expresses it, a natural

danger signal to warn us of what may come later". . . . "Concerning the putrefactive types, we must bear constantly in mind the fact that it is only one step, chemically speaking, from the amino-acids, the form in which most of the proteins of milk are absorbed, to the toxins which are produced from these same proteins by the action of certain putrefactive bacteria if the conditions are favorable."

In a second paper Holt deals with the digestibility of the proteins of milk and discusses the new method of feeding high percentages of proteins, especially casein, to infants. He says that the curds in the stools are chiefly composed of fat, that most of the colic and flatulence are due to carbohydrates, and that constipation depends much more on fat and salts than on casein.

Experiments in metabolism have shown that protein is taken care of with ease by infants who can not manage fats and carbohydrates. This has led to the practice of giving such infants larger amounts of protein food. An infant fed on modified cow's milk receives from two to three times as many calories in the protein content of his food as one fed at the breast. But other experiments showed that a great excess of proteins without carbohydrates caused prostration, fever and leukocytosis, which symptoms ceased immediately upon resuming the ordinary diet. "The increase in the general metabolism from such feeding, and under certain circumstances, the actual withdrawal of fat and carbohydrate from the body, may furnish an explanation of why it is so difficult to increase weight if fat and carbohydrate, but especially the latter, are much reduced."

Holt explains the need of certain of the amino-acids in the food of infants. Lysin is absolutely necessary for growth. "Animal proteins, as a rule, are relatively rich in those amino-acids which we will call the essential ones, while many vegetable proteins are very deficient in them." Certain proteins, as lact-albumen, contain the essential amino-acids, and others, as casein, are deficient in certain amino-acids important to growth. Woman's milk has relatively twelve times as much lact-albumen as cow's milk,

and it is the cystin content of lact-albumen which is essential to growth.

Holt concludes "that the deficiency of cow's milk casein in certain essential amino-acids may be made up by giving an excess of this protein". . . . "In our experience, in acute intestinal disturbances it is the carbohydrates that are most frequently at fault, and sugars are even more badly borne than starches. Milk sugar seems then to cause more disturbance than any other form of carbohydrate. It is for such cases that Finkelstein's milk modification . . . is so valuable."

"For its relatively high fat is usually tolerated without difficulty when very low sugar is given. This preparation is to be regarded as a therapeutic agent, not a method of infant feeding, but it is one of the most valuable additions to our resources that have been made in recent years".

In a third paper Morse deals with the subject of fats in infant feeding, and shows that their proper assimilation depends upon normal chemical and physiological conditions in the intestine. Fats in percentages higher than those found in human milk will cause trouble. When there is digestive trouble the fats must be reduced.

The rôle of salts in infant feeding is discussed by Bartlett, who shows the necessity of certain of the salts to give the proper reaction to the intestinal juices and to keep the blood in its normal state. The foodstuffs must contain sufficient iron, or there will be anemia. Casein is deficient in iron, so infants may do better when beef juice, yolk of egg and vegetables are added to a diet of modified cow's milk.

To sum up—a perfectly balanced diet is necessary in feeding the healthy infant, and intelligent modifications are needed to meet special conditions in babies who are sick.

G. H. C.

Drugs Below Standard.—According to a recent issue of the Service and Regulatory Announcements of the Bureau of Chemistry, several Washington druggists have pleaded guilty to the charge of selling adulterated and misbranded tincture of iodine. Samples of tincture of iodine were purchased under authority of the Secretary of Agriculture from a number of Washington druggists by inspectors of the Health Department, and analysis of the samples showed that many of them were deficient in some ingredient essential to a full strength tincture.

Original Articles

SURGICAL AFTER-TREATMENT.*

W. W. GRANT, M.D., DENVER.

In treating a subject that would require a volume, I can only hope to consider a few of the more important phases, or characters, that confront the surgeon in his daily life. His duty begins with the presentation of the patient, and his responsibility ends when he is dismissed. There is reason for the belief that some surgeons consider their chief work and responsibility ends with the operation, and it is probably true with many that their conception of a surgeon is embodied in the simple term of skillful technician. But a surgeon's responsibility fairly begins with the conclusion of the operation. It is just as essential to know when to operate, and when not to operate, as to know how to operate. In one respect it is surgical sense, in another it is scientific refinement, and in another mechanical art—together these three give character to surgery.

The after-treatment must necessarily be influenced by the pre-operative conditions governing each case. Prophylaxis has its place in surgery as well as in medicine. The surgeon is fortunate who has an assistant, or interne, to whom he can safely confide the care and destiny of his patient, for the after-treatment not infrequently determines the result, and is as important as the operation itself. The appropriate anesthetic, and whether local or general, must be determined by the age and condition of the patient and the character of the disease. The choice and the course to be pursued test the judgment of the surgeon to quite as great a degree as the operative procedure in the case. No one should underestimate the necessity of a quiet environment and confident anesthesia—confident on the part of the anesthetist no less than of the patient. The after-treatment is involved in these considerations. Except emergencies, the preparation of a patient, whether for days or a few weeks, often diminishes the

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6, 7, 1915.

risk, and gives finish to the work of the surgeon, and favorably modifies the after-treatment. Too much time is usually consumed in the immediate preparation of a patient for the operating room. Everything that is possible should be done before the patient is under the anesthetic, and no patient should be kept under its influence one minute longer than is necessary for doing the best and most complete work, for not one thing, but a variety of circumstances and incidents, influence both the after-treatment and the result. The choice of general anesthetics is practically limited to ether by the drop method, or the intra-pharyngeal, and oxygen and nitrous oxide. Crile contends that post-operative vomiting, gas pains and shock are most favorably affected by the anoci-association method. Having in mind the additional time required in its use, I have never been so impressed with its necessity, nor with its advantage over the simple skillful administration of ether, to employ it, other than in exceptional cases. I believe I have just as satisfactory results without it as those claim who use it generally. Other considerations to which I have alluded have, as a rule, more influence or effect on the immediate post-operative history than nerve blocking.

There should be a **recovery room** in every hospital, where the patient should remain until reaction is complete. To put a noisy, restless patient, drunk with ether and pain, and often in shock, in a room with others, or in a general ward, is extremely objectionable, and is prejudicial in its influence upon other patients, as well as upon the patient just out of the operating room. We submit to it, doubtless, because there is no other recourse. A cheerful, light, pleasant environment is always conducive to the well-being of the patient.

Persistent vomiting is best treated by stomach lavage as the one measure of most importance. Pre-operative conditions, as well as the anesthetic, the time consumed in the operation, and the diseased conditions, are influential as to the character of the vomiting and its persistence. In a recent report Borrot claims that 10 grs. of quinine per rectum every 6 hours until 40 grs., if necessary, are administered, will effectually

control post-operative vomiting. It is simple and easily tested, but I have had no experience in its use.

The vasomotor exhaustion theory of **shock** with paralysis of the peripheral vessels and accumulation of blood in the venous trunks, is discredited by some physiologists. The acapnia theory of Haldane and Henderson, which regards the dioxide content of the blood as the regulator of respiration and circulation and the chief factor in shock, is more generally accepted. Increase in dioxide causes increased respiration, while its diminution causes a fall in the blood pressure, and this favors venous stasis and shock. Long exposure and handling of abdominal contents also favor acapnia. The practical conclusion is that the lungs are not infrequently overworked, as too much oxygen tends to produce shock by decreasing the dioxide content, the stability of which is necessary to normal respiration and circulation. Rapid increase in circulation and shortened diastole mean imperfect filling and emptying of the heart cavities, with diminished blood pressure and impending shock, from the diminished dioxide content of the blood. Surgical shock is to be distinguished from the collapse due to loss of blood, though the addition of hemorrhage to other causes does intensify and prolong shock.

The drug treatment of shock is disappointing; adrenalin raises the blood pressure, caffeine is an arterial constrictor, and atropine a respiratory stimulant, but they are not very effective in combating shock. A quiet environment, infusion of salt solution during and after operation, and the rectal drip of the same solution, or milk and sugar solution with external dry heat, are the best means at our command for combating shock. Blood infusion (it seems to me) is not necessary or desirable unless the loss of blood is sufficient to perceptibly diminish the blood pressure. We should not forget that persistent pain increases shock, and that a little morphine and atropine may at times be useful. In hemophiliac or bleeding cases, measures to promote coagulation of the blood, such as animal sera and gelatine and salt infusion, should be used before and after operation if the condition is recognized,

but the blood pressure should not be increased.

Thrombophlebitis and **emboli** are sufficiently common to deserve consideration always. Every surgeon is filled with disappointments, and sometimes chagrin, when ten to twenty days after a simple and clear abdominal operation—for instance, removal of the appendix for chronic disease, or a rectal operation—a thrombophlebitis occurs, very generally in the left iliae, femoral, saphenous and popliteal veins. The patient, instead of being up in ten days or two weeks, will be in bed two or three months, and an invalid for many more. Many theories have been advanced in explanation. Pathologists and surgeons have affirmed and denied the existence of infection. There is as a rule no pus in these cases. At the present time the theory of a mild infection as the cause is entertained by most surgeons and writers on the subject. A careful examination and investigation of such patients before operation will reveal changes in the blood elements, particularly the platelets, with changes in the size and form of the red blood cells, poikilocytosis. This condition of the blood is common to chlorotic and anemic subjects, and with a slowing of the current, which usually exists, favors coagulation and thrombophlebitis and embolus. Such patients are frequently neurasthenic. It is noted by the Mayo clinicians that they are unable to determine any method to lessen the frequency of thrombophlebitis. It will be a wise precaution in these cases not to promise too much as to prompt cure and restoration of health. It is well to feed and rest these patients, and to give iron to improve their blood condition before rushing them to the operating table, for this treatment will be required for a long time after operation. They generally get well in the course of time. Pulmonary embolus is the cause of many sudden deaths occurring soon after operation, and sometimes on the table. It is most common in extensive operations with considerable pressure or trauma to large vessels, as in hysterectomy for uterine myoma. These are not emergency operations. The blood seems to coagulate with unusual rapidity in such subjects. Measures which will retard this process would, I

believe, serve a good purpose in prophylaxis. Citrate of sodium might be useful, and would also stimulate the lymphatics, if given freely for a week in advance of the operation. No successful operation has been performed for the removal of embolus from the pulmonary artery, though attempted by Trendelenburg. The treatment is therefore purely of a preventive nature.

Subphrenic abscess is the sequel of acute abdominal infections, **more frequently** arising from a post-cecal, gangrenous and perforated appendix, or from a duodenal or gastric ulcer. It is always a serious and dangerous complication, and sometimes perforates the diaphragm and produces an empyema, when diagnosis and surgical treatment are needlessly delayed. When due to retrocolic appendicitis or to renal suppuration, it is extra-peritoneal. Most cases are intra-peritoneal. When the infection continues after such operations, with or without drainage, we are justified in suspecting subphrenic abscess, and especially when at a primary operation for appendicitis there was no extravasation into the general peritoneal cavity. Direct extension of the infection, posterior to the ascending colon, is not uncommon, and is often due to imperfect drainage at the primary operation. Incision and drainage is the only treatment, and if not too long delayed is successful. Physical signs will determine the location of the pus collection, with an occasional use of the operating needle. The clinical history of a perforating ulcer, or of a gangrenous appendix, is always suggestive of the nature and location of the trouble.

Imperfect closure of the abdominal wound, and the injudicious use of drainage and drainage material in suppurative conditions, are responsible for the slow healing of wounds and for post-operative hernias.

Fecal fistula is not uncommon after the removal of a gangrenous appendix. As a rule a secondary operation is not necessary. With simple tubal drainage of rubber or glass, and irrigation for cleanliness, the lumen of the stump, or intestinal opening, will ordinarily close in one to four weeks.

Stitch abscess is a not infrequent sequel to abdominal operations. Koenig and Mar-

burg state that the method of suturing is more important than the material used in closing a wound, and at a noted clinic it is claimed that the tissues are more responsible for such infections than the suture material, instruments or dressing. It would not be wise to lay less stress than is now done on cleanliness and the purity of the suture material, or unpleasant results will multiply; neither should it be overlooked that strangulation of tissues by sutures en masse is a cause of localized gangrene and, with the aid of the *staphylococcus albus*, of stitch abscess.

The after treatment of **gall bladder surgery** depends upon the nature or character of the operation. The frequent relation of infective cholecystitis to disease of the pancreas is an acknowledged fact. Interstitial pancreatitis has not infrequently been mistaken for cancer. The diagnosis has been determined finally by drainage of the gall bladder, and resulting cure of the pancreatic disease. Drainage is curative in most infections, whether the infection is due to the typhoid or colon bacillus or, as Rosenow has demonstrated, to streptococci in the bladder, with or without stones. The trend now is distinctly in favor of cholecystectomy. Deaver has stated that the common duct should be drained whenever the gall bladder is removed. This seems illogical, for if the ducts require drainage, why remove the gall bladder? It is both safer and easier to drain the bladder than the ducts. Erdman's statistics show that the mortality in cholecystectomy is as great, if not higher, than in cholecystostomy. There are valid reasons for giving the preference to drainage, and the mortality should be less.

All surgeons are familiar with the not uncommon necessity of a secondary operation, months or years later, to remove stones packed or hidden in the gall bladder, or in duct pouches, at the primary operation. With the presence of many small stones it is not easy to determine when all are removed. With a drainage tube in the gall bladder, their presence is determined and their removal easy. The destruction of ordinary landmarks in radical operations, and the complications resulting from extensive

adhesions, are recognized by all experienced surgeons. Besides, we are familiar with the fact that chronic interstitial pancreatitis is generally best treated by drainage of the gall bladder. The objection, therefore, to general removal of the gall bladder, except when it is gangrenous, with thick and rigid walls, rests upon a reasonable foundation. Drainage for a few weeks, with irrigation after the first few days, is the best treatment for most cases, and the best prophylactic against future complications.

I do not wish to dismiss the subject without reference to the habit common to some surgeons of getting their patients, even after severe abdominal operations, out of bed and walking about in a few days or a week. It is heralded rather boastfully, and it may be a good advertisement, but severe pathological conditions do not justify it. A reasonable time in bed—an average of two weeks at least—is a conservative measure of precaution, and gives the organism the time necessary for repair and to readjust itself to normal conditions of life and environment. Most patients are not well when they leave the hospital. Many do not progress so satisfactorily as desired, or perhaps expected. They often need professional care and supervision for a much longer time, and the home care and treatment should be administered by the family physician; but until the surgeon's work is completed, the responsibility is his and by no device can he escape it. His supervision is absolutely necessary from both the surgical and the legal standpoint.

325 Mack Block.

DISCUSSION.

Casper F. Hegner, Denver: Dr. Grant has very appropriately said that the duty of a surgeon begins with the presentation of the patient, and his responsibility does not end until the patient is discharged.

It is quite generally accepted by surgeons that their duty begins with the operation. The diagnosis of the case in hand is left to the medical man in the case. It is true, the diagnosis of the careful and painstaking medical man, who has had more time and ample opportunity to study the patient and his symptoms, is more accurate, but the surgeon falls short of his full duty if he does not give the patient the additional benefit of his diagnostic skill and experience.

It is not uncommon, especially for a busy surgeon, to go over the patient in a very superficial way if he does so at all. This habit of letting the other fellow do it occasions dissatisfaction to the conscientious medical man in the case, is a

positive disadvantage to the patient, and is not infrequently embarrassing to the surgeon during the operation. In nearly every busy surgical clinic of this country I have seen operations started for conditions incorrectly diagnosed by some one other than the operator. If the important item of diagnosis or its corroboration is neglected, what attention can one expect to be given the many necessary details in the pre-operative and post-operative care which is due every operative subject. Unless he gets a full measure of attention from the surgeon in these he can justly consider himself neglected.

The question of pre-operative and post-operative study and care is deemed of such importance by some surgeons that they give these painstaking consideration. Embarrassment during operation and unpleasant, if not always dangerous, sequelae, are often thus avoided.

It has been said, and with much truth, that the patient's fate is determined in the operating room. No reasonable man can take issue with this statement, as the complications mentioned in the paper testify. Every patient realizes the dangers attending operations, and were it not necessary for the restoration of his health he would not submit to surgical procedures.

To the purely technical surgeon his duty begins and ends in the operating room. This may give such a man complete satisfaction, but he certainly falls short of what can reasonably and justly be expected of one who would be a surgeon in the fullest sense of the term. The responsibility does not begin or end with the operation. If he is conscientious he will feel that it has then only fairly begun.

The after-care in most cases of well performed operations, when all that should be done is well done, and not a thing necessary left undone, nor anything unnecessary attempted, is comparatively simple, and convalescence is smooth and uninterrupted.

The final results in many cases depend largely upon the pre-operative and post-operative attention given the individual. This is especially true in desperate cases or poor surgical risks.

The question of the anesthetist and the anesthesia is most important. Mutual confidence is absolutely essential to smooth anesthesia. It would be desirable for the patient to meet the anesthetist before beginning the anesthetic. There is not much choice in the anesthetic or in the method of its administration except in special operations. This may be with advantage left to the experienced anesthetist. Complexities should exist in the head of the anesthetist rather than in the apparatus or in the anesthetizing agent. A properly administered anesthetic diminishes the degree of shock to almost none, and practically eliminates post-operative vomiting.

It is much better, and often possible, to avoid post-operative difficulties, but if they do arise, they are best treated as Dr. Grant has indicated: lavage of the stomach, either with or without the stomach tube, for vomiting; morphin, atropin and saline solution for shock; gas pains can be materially diminished by appropriate pre-operative care of the bowels and the post-operative administration of pituitrin and enemata. Subphrenic abscess is not always easy to diagnose, but its presence should be suspected as suggested by Dr. Grant. Stitch abscess, pulmonary embolus, and thrombophlebitis are determined by factors inherent in the patient or present during the operation.

The surgeon should never be too busy to do

his full duty at all time to his patients. If he is too busy or disinclined to assume the responsibilities, he should have associated with him in his work a man of good judgment who is trained, capable and willing to carry out this very important phase of his obligation for him.

T. A. Stoddard, Pueblo: There is no doubt the post-operative treatment is as important in all cases as the operation itself, and in many cases more so. The man who operates and leaves his patient, or relegates his patient to the care of the intern, is not doing his patient justice; he is not doing himself justice, and he is not doing the surgical work justice. The post-operative treatment depends in a measure on the work already done.

Dr. Grant spoke of anoci-association and somewhat decried it. He does not believe much in it. I believe that there is a great deal of benefit to be derived from the use of anoci-association. I believe Dr. Crile gets good results. I believe every one who uses it does, and the patient is benefited by it, and I do not believe we should leave out anything that will give a patient a better chance for recovery.

Keeping a patient on the table under an anesthetic too long a time is pernicious. The habit of hasty operating is bad. It is not surgery at all. It is operating, but it is not surgery, and I claim there is often a great deal of difference between operating and surgery. The man who will take three or four hours to do a simple operation that ought to be done in fifteen or twenty or thirty minutes is not doing surgery.

The use of novocain and anoci-association does take a little time, but it is only a short time if properly done.

The drug treatment of shock is very unsatisfactory. I do not know of anything that brings about good end results unless it is morphia and atropin.

As to the use of the drainage tube in gall-bladder cases and cholecystectomy, I want to say that cholecystectomy is not justified in one out of a thousand cases in which it is done. I believe I am safe in saying that. Cholecystectomy is only justified when the gall-bladder is invaded by some malignant growth or so disorganized and so destroyed by long continued cholecystitis or cholelithiasis as to be absolutely useless as a reservoir, and the reason why so many cases come back to the surgeon for reoperation after drainage, I believe, is to be found absolutely and only in the method of drainage. I believe the method of drainage of the gall-bladder with a rubber tube as hard almost as a piece of iron, put in there and left in for days, is pernicious. It is not good surgery.

W. F. Singer, Pueblo: The paper that has been presented by Dr. Grant is a very suggestive one. The probability is that there are few here who would fully agree with him in all of its phases. It seems to me, to get back to basic principles, that the first thing we should do in taking up abdominal work is to see whether the pre-operative, operative, and post-operative work has been correct or not, checking up the mortality and morbidity.

Dr. Stoddard has made it a little strong with reference to the use of hard tubes and all that sort of thing, although I agree with him in so far that we should be cautious not to do damage with the tube. But it serves a good purpose, so do not let us reject it off-hand.

With reference to shock, I do not believe that acapnia is the cause of shock. All men realize first one thing and then another thing as the

cause of shock, but I believe the chief cause is too much handling of sensitive organs. If men handle the contents of the abdominal cavity they will get shock.

In reference to the treatment of gall-bladder cases, I desire to call your attention to what I consider an important factor. If you have a case of septic gall-bladder for a long time you have a chronically diseased gall-bladder. In certain border-line cases, where you are tempted to remove the gall-bladder, if you combine a vaccine with drainage—a good autogenous vaccine—it is a very important help.

Charles A. Powers, Denver: Malignant cases should be watched very, very scrupulously. One should see a case of malignancy after operation at least every two or three months for at least five years, and every six months thereafter. There is not one of us who has not had late malignant relapses; early malignant relapses are only too common. A single instance may illustrate the importance of watchfulness. A woman, forty-five years of age, presented herself with a moderate sized tumor just above the knee on the inner side. It sprang from the fascia lata: it was removed in wide limits; it was said by Dr. Whitman to be an endothelioma. Every two months the woman returned to the office for examination; at the end of six months a small nodule was detected. This also was very widely removed and proved, curiously enough, to be a sarcoma, evidently a transition from an endothelioma to a true sarcoma. The last operation was done a year and a half ago; the woman has been examined every three months since, and thus far she is free from a relapse. It has happened to me to see a recurrent nodule in a breast scar no less than seventeen years after the original operation.

Just one word further, in reference to a thought suggested by the last speaker, Dr. Singer. Men differ very much as to the time at which their abdominal cases get up. Doubtless some keep them in bed too long. I would not say that Dr. Singer could err in letting them up on the second or third day, but I would venture to suggest to him that some few years ago a well-known surgeon of New York instituted this early rising process and a woman brought a damage suit in the sum of \$25,000.

O. M. Gilbert, Boulder: Just a word or two about anesthesia. The open method seems to be the one that is generally accepted, and yet I recall reading an article in one of the July issues of the Journal of the American Medical Association by Yandell Henderson, physiologist at Yale, and Bryant, on the closed method of anesthesia. We have used this method in twenty-four cases, five of which had bad previous anesthetic records, and we have been much pleased with it. It is wholly in accord with other recent investigations, pointing out the necessity of retention of carbon dioxide within the blood. We have had much less difficulty and fewer unpleasant conditions to contend with after operation by adopting the closed method. I have modified my old somnoform inhaler for use in this method. You can lift it from the face to let in air; you go by the color and condition of the patient in general, but it adapts itself quite well. We dump in the whole amount of ether, the amount averaging from two to three and a half ounces.

O. S. Fowler, Denver: One of the greatest factors in the production of shock is a lack of proper preparation of the patient. It is the custom to see a patient this afternoon, for instance, and ask him if his bowels have moved today, and

with an affirmative answer the surgeon says to him, go to the hospital tonight and we will operate tomorrow morning. In giving a general anesthetic to such a patient the toxic contents of the anesthetic are thrown into the system; the kidneys are under more or less shock. You have, at least, the usual content of the body toxins for that patient to handle; you have increased the work of the kidneys and decreased their ability to eliminate. The average patient on whom we operate, unless it is an emergency case, should be in the hospital from two to four days previous to operation. During that time, either the second or third day before operation, he should have a purge. From that time he should have a light diet, with large quantities of fluid. He should have half a pint of water every hour by the mouth, or if he cannot take it by the mouth the water should be given by the bowel. I am sure this helps in the prevention of post-operative complications. I believe it is the most important factor in the avoidance of shock. You will rarely get suppression of urine; you will not get any of the more serious post-operative complications. I feel that I should mention here the value of local anesthesia in the prevention of post-operative complications. I can say that in an experience of nearly two hundred cases of major operations done under local anesthesia, in no case have I had shock. These operations have comprised operative procedures for stones in the kidney, prostatectomy, appendectomy, stones in the gall-bladder, resection of the gall-bladder, etc.; and these patients have gone back to their rooms in practically the same general condition as they left them. They are further along one hour after operation than patients with a general anesthetic would be in five or six days after operation. The gas pains are decreased; the general condition of the patient is better, and I am sure, if you will observe these cases in your own experience or in that of others, you will conclude that local anesthesia is valuable and indicated in many of these cases. Whether anoci-association has anything to do with it or not, I do not know, but if you use local anesthesia you will not have shock. Therefore, I think the most important features in the treatment of post-operative conditions are the preparation of the patient and the method of anesthesia.

W. W. Grant (closing): In my paper I did not say that I had no faith whatever in the use of anoci-association. Many of you will remember that when Dr. Crile read a paper on anoci-association in Pueblo a few years ago, he was asked how long, as a rule, his patients had gas pains and nausea symptoms, which he claims can be controlled by anoci-association. Dr. Crile replied twenty-four to forty-eight hours. Under the skillful use of ether patients are over this trouble in twenty-four to forty-eight hours without anoci-association. I do not believe it has practically any influence on the ultimate result. As to greater comfort for twenty-four or forty-eight hours, it may be true, but beyond that, it does not affect the convalescence of the patient.

With reference to the remarks made by Dr. Powers concerning malignant cases, I agree absolutely with what he has said as to the necessity of watching not only the malignant cases, but cases requiring drainage, and where there is necessity for great care in frequent examinations afterwards.

In reference to the gall-bladder, you all know the views of Dr. McArthur. He drains the gall-bladder and gives saline solution through the gall-bladder into the intestines as a cathartic, and

uses this method satisfactorily. As to drainage material, according to experiments made in the last year or two, to which I have alluded in a former paper on drainage of the peritoneal cavity, glass drainage material is the best, next to that rubber; but I do not believe it wise to use a rubber tube long at any time. It soon becomes infected, and if you change it frequently you will get more satisfactory results. Admitting that glass is a safer material, and that it is more easily kept clean, yet glass is rigid and hard, although it is in that respect not worse than the hard rubber to which Dr. Fowler alluded.

I have left undiscussed the question of nursing, because nursing, and the nurse, are about what the operating surgeon makes them, and that we should have a greater degree of efficiency in post-operative treatment in our hospital work goes without saying. All recognize the importance of improvement in this respect, and the hospital staff should insist that there be some place where the patient after operation should be kept alone during the period of reaction, and not put in a room with others, both for the benefit of the patient himself, and of those in the ward around him.

Dr. Johnson: Do you give a purgative after operation?

Dr. Grant: I do not give any violent purgative. I let the patient eat some liquid food within six to twelve hours of the operation. I do not believe a patient should go on the operating table for a severe operation in a starved condition.

As to cathartics after operation, Crile in a recent article speaks of going back in abdominal work to the method of Alonzo Clark, brought again to our attention by Yates, of giving opium in rather constipating doses for the purpose of quieting the parts, on the theory that too much peristaltic movement will distribute infection.

THE USE OF HEAT IN THE CONTROL OF INOPERABLE CANCER.*

C. E. TENNANT, M. D., F. A. C. S., DENVER.

While it is my purpose in this paper to refer more particularly to the treatment of cancer of the uterus, I also wish to emphasize the value of this same principle of treatment when applied to malignant neoplasms in general.

Were it not for the fact that from sixty to eighty per cent^{1, 2, 3} of our cases of uterine cancer come to us too late for radical extirpation, and that a certain number of malignant neoplasms located elsewhere in the body are prone to recur after knife excision, there would be little need for the more recent investigations by Percy⁴ and others as to the influence of heat upon these lawless growths.

No doubt there are some statistical groups in which the mortality is 100 per cent. This high mortality would occur if the late cases were grouped together, more especially that particular form of surgical cancer which Percy so well describes as the infiltrating or "inverting" form, which pathologically is a form of squamous cell carcinoma of the cervix and is exceedingly vicious.

From time immemorial chemical substances and compounds have been proposed and tried in an effort to deal with the local conditions. We have also had the advocates of the intravenous method of introducing chemical compounds, both inorganic and organic, for the purpose of inhibiting further nutritive support to the neoplasms, or to prevent systemic metastasis. The latter method according to Wassermann and others has been effective in mice tumors and promises something more hopeful in the control of human neoplasms.

Radiotherapy is proving not only an excellent adjunct in the care of these malignant growths, but it is even being proposed as a sole remedial agent by some authorities; and in all probability in selected cases this is true. There is no doubt, however, that its true place in therapy will soon be found, and that it will play an important rôle in the control of cancer if the work of Baum of Berlin and that of Krönig and Gauss of Freiburg is confirmed by others. Since the introduction of the hard tube in this country, I am disposed to adopt the repeated cross-fire X-ray treatment in all my abdominal and pelvic malignant cases, after controlling or eliminating the growths by the methods to which I shall later refer. Few have had experience with radium in the treatment of neoplasms, on account of the difficulty of obtaining the element. But those who have had experience with it grow more enthusiastic, and are constantly adding their testimony to the fast growing literature on the subject of cancer treatment.

Since cancer is primarily a local lesion, and metastasis occurs either by the lymphatics or the blood stream, depending upon the location of the growth and the method of its early evolution, it follows that the treatment which will best control metastasis

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

¹D. C. Baifour.

²Reuben Peterson.

³J. Wesley Bovee.

⁴Journal of the A. M. A., vol. LXII, p. 1613.

and yet destroy the local lesion will be most effective in curing it.

Heat has long been known to positively retard or destroy malignant growths, whenever these growths have been accessible to this form of treatment. The late Dr. Byrne of Brooklyn, N. Y., as early as 1896⁵ reported sixty per cent. of cures of uterine cancer by the use of the actual cautery. Laboratory investigations by Haaland in 1905⁶ demonstrated the susceptibility of malignant cells to heat, and showed that they would become innocuous after exposure to a temperature of 111.2 deg. Fahr. (44 C.) for a half hour period. Since this time abundant proof has been furnished by Jensen⁷, Vidal⁸ and Loeb that cancer cells are susceptible to destructive changes at a lower temperature than are the cells of normal tissue.

Lambert⁹ has also recently stated that sarcoma cells are destroyed by a temperature of 108.5 deg. Fahr. (42.5 C.) for some twenty-four to forty-eight hours, and after twenty minutes exposure to 114.8 deg. Fahr. (46 C.), while normal connective tissue cells survive these various exposures. So far as I am aware, we have not had definite proof of the exact temperature at which normal living cells are destroyed, although Percy has stated that it is somewhere between 131 and 140 deg. Fahr.

To apply a graduated heat so that it will be equally distributed throughout a malignant mass, and yet not to create a degree of heat sufficient to destroy all tissue structure, has been and still is quite a problem.

⁵J. Byrne. Relative Merits of Total and Partial Hysterectomy for Cancer of the Cervix by Ordinary Methods and Supra-Vaginal Excision by the Galvano-Cautery. *Am. Jour. Gynec. and Obstet.*, vol. IX, page 32.

⁶M. Haaland. Imperial Cancer Research Fund, Third Report. 1908.

⁷Jensen-Loeb. Quoted by Clowes. Annual Report N. Y. State Cancer Laboratory, 1910.

⁸Travaux de la Deuxième Conférence Internationale pour l'étude du Cancer, 1911, page 160.

⁹Robert A. Lambert. Demonstration of the Greater Susceptibility to Heat of Sarcoma Cells as Compared With the Actively Proliferating Connective Tissue Cells. *Jour. A. M. A.*, Dec. 14, 1912, vol. 59, p. 2147.

¹⁰J. F. Percy. A Method of Applying Heat Both to Inhibit and Destroy Inoperable Carcinoma of the Uterus and Vagina. *Surg. Gynec. and Obstet.*, vol. 17, p. 371.

¹¹This set of instruments comprises three handles, five cautery tips and a rheostat, and is made by Sharp-Smith Co., Chicago.

Percy has been working upon it for the past six years, and has finally devised a very successful method¹⁰ which is receiving the endorsement of many surgeons throughout the country. So far as I am aware, he has developed the best collection of electric cauteries yet introduced for this work¹¹.

Percy's method is a modification of the old and well known actual cauterization, and is founded upon two observations, one of which was made by himself during his series of experiments, the other was developed by a series of laboratory experiments by workers already referred to.

The first of these observations, as has already been suggested, is that the vitality of malignant cells is destroyed at a lower degree of temperature than that which affects normal cells. The second is "that excessive temperature of the heating iron produces a zone of carbonization of the tissues about the electrode, and acts as an asbestos covering to the iron, thereby preventing the attainment and the diffusion of a sufficient degree of heat through the mass". Percy therefore advises that "It is better to develop heat below the degree of carbonization and allow it to act for a long time, especially when a pelvis is filled with cancer growth; while actual cauterization with carbonization may be applied when treating a small circumscribed well defined growth".

In a recent communication Balfour of Rochester, Minn., states¹²: "This method of Percy's possesses distinct advantages over any form of treatment with which we are familiar. At first the application of this method was restricted to the more advanced cases, but of late, its unique destructive effect becoming evident, the scope of the treatment has extended, and it has been employed as a primary treatment to a secondary total hysterectomy in an occasional border line case."

Percy in a personal communication states that he has several cases of inoperable cancer which are now well, and which were treated by this method five years ago. Balfour in his recent report on the use of this

¹²D. C. Balfour. The Treatment by Heat of Advanced Cancer of the Cervix (Percy Method). *Journal-Lancet*, St. Paul, Minn., July 1, 1915.

method at the Mayo Clinic states that from January 1, 1914, to May, 1915, there have been thirty-one cases of cervical carcinoma, too far advanced to permit of primary radical operation, which have been treated by this method; and while sufficient time has not elapsed to form a definite conclusion of the end results, "the majority of the patients returning in six weeks to three months have a freely movable uterus, with an atrophied, smooth, clean cervix and vaginal wall. In certain of these cases in a secondary total hysterectomy, McCarty in a general search of the specimen was not able to demonstrate any evidence of malignancy". But I quite agree with Balfour when he says: "Despite the fact that malignancy may be destroyed as far as can be determined, yet with our uncertain information as to the life history of cancer, it seems more rational to consider such a uterus potentially malignant."

It is on this theory that Clark has been working for the last eighteen months¹³. He strongly advocates heat as a forerunner to the Wertheim operation, thereby restoring many of the absolutely inoperable cases to the operable class. W. L. Clark¹⁴ has also reported favorably on the use of heat in the desiccation of congenital and new growths of the skin and mucous membranes.

The following three cases which I report should fairly be classed in the group which I referred to as having one hundred per cent mortality under the ordinary operative procedure.

Case 1—Mrs. M. L., age 46, was referred to me by Dr. F. C. Strong in April, 1914, because of a profuse uterine hemorrhage which had existed for more than a year, and had finally caused her to become bedridden, on account of the anemia and attending profuse sanguinary discharge. The patient's family and personal history prior to this were negative. On examination she was found to be decidedly anemic, with wasted musculature and pale mucosa. Hemoglobin

40 per cent, red blood count 2,500,000. Her weight was 118 pounds. The vagina was filled with a large, bleeding, exuberant, succulent, fungoid mass, which was about four inches in diameter and presented at the labia. This mass was attached to a semi-neerotic crater-shaped cervix, and both structures would bleed profusely on the slightest manipulation. The uterus was adherent to the bladder, and there was considerable inflammatory induration about the utero-cervical junction.

Immediate operation was advised and accepted. A knife was not permitted to come in contact with the malignant tissue, the actual cautery being used to remove the large fungous mass. Following this the Percy cautery iron was applied until the cervix and deeper uterine structures presented a white, partly cooked appearance and the vicinity of the operating room had the odor (as one of my confrères described it) "of broiling beef steak". Convalescence was rapid, the patient being up on the twelfth day. She afterwards reported to me monthly, although all vaginal discharge had disappeared.

About the first of November, 1914, an occasional spot of blood would be found on her clothing, and on examination I discovered a slight recurrence of the trouble, and advised a return to the hospital and a repetition of the treatment. This was done on the 14th of November, and at this time the uterine body was free in the pelvic cavity, but vegetations and ulcerations were prominent about the stump of the cervix. Heat was again applied for about an hour, at the end of which time the tissues about the vault of the vagina were white and soft. Considerable slough followed this treatment, and a vesico-vaginal fistula appeared on the seventh day after the operation; otherwise patient did well. Several efforts under local anesthesia failed to effect the cure of this fistula, but finally under a general anesthetic and the aid of a Wetherill drainage tube, placed in the urethra, a cure was accomplished much to the comfort of the patient and the relief of the writer.

During the attempt under local anesthesia to close the bladder it was discovered

¹³Samuel M. D. Clark. *Surgery, Gynecol. and Obstet.*, vol. XX, p. 558.

¹⁴W. L. Clark. *The Desiccation Treatment of Congenital and New Growths of the Skin and Mucous Membrane. Journal A. M. A.*, vol. 63, p. 925.

that a vaginal graft of the malignancy had occurred on the mucous surface of the labium minus, probably the result of the great stretching and a slight tear of the vaginal mucosa while using the Pèrey water speculum. Producing local anesthesia with an injection of novocain solution, the same slow heat was applied to this secondary malignant area, and at the present time it is difficult to even find the scar produced by the burn. Balfour says that the swabbing of the vagina with Harrington's solution after the removal of the speculum has been adopted as a general routine at their clinic, in order to prevent this complication. The patient is now absolutely well, and has steadily gained in flesh, weighing at this time 145 pounds or a total increase of 27 pounds.

Case 2.—Mrs. N. H. T., aged 42, had been operated on three years before for pus tubes and chronic appendix. Presented herself for recurrent carcinoma, six months following a total hysterectomy for an inverting squamous cell cervical carcinoma. In this case the general sepsis was marked at the time of the uterine extirpation, there being also extensive involvement of the pelvic lymphatic glands. This had recurred to some extent, as well as the disagreeable discharge. The application of the heat relieved the discharge and constitutional symptoms again for about six months, when the conditions grew more aggravated and the patient finally died with general carcinosis one year after the use of the knife in doing a pan-hysterectomy.

Case 3.—Mrs. J. H. K., aged 41. I was called to see the patient at Park Avenue Hospital on August 1, 1914, with the attending physician, Dr. E. B. Swerdfeger. I found the patient with a greatly distended abdomen, temperature 101, pulse 120 and respiration 28. She was in great pain and unable to retain food, and also had considerable difficulty in emptying the bowels on account of some apparent obstruction in the sigmoid. She stated that she had been well up to April 1, 1914, when she had fallen from a street car, striking on her left hip. Immediately following this she was confined to her bed on account of abdominal pain and vomiting, and she had been so confined ever since with a steadily growing abdominal tumor.

Operation was advised and accepted, and upon opening the abdomen we found a large partially encapsulated mass occupying the posterior half of the entire abdominal cavity, extending from the attachment of the broad ligament to the left anterior aspect of the ilium, up and well under the diaphragm. Sections from the mass were examined by Dr. Hillkowitz and pronounced to be "mixed tumor containing spindle sarcoma cells, with papillomatous degeneration", but my diagnosis made at the operating table was that of fibro-sarcoma. Not having the heat equipment with me at the time, I did a radical resection of the mass with the knife and scissors. The patient made a rapid convalescence and returned home, only to discover within eight weeks that the mass was returning. She was therefore again taken to the hospital and another incision made over the right rectus above the umbilicus, as this was then the center of the new growth. Three of the Pèrey cautery irons were pushed into the mass, and slow heat applied for one hour, the periphery or capsule of the mass being too hot to be held comfortably in the gloved hand.

Improvement was very slow after this operation, and a considerable amount of necrotic tissue was discharged from the tumor mass through the opening left in the abdominal wall for drainage. Two months after this last operation the tumor again commenced growing and I then undertook to treat it by another method of heat, as the cautery irons did not seem effective. I decided upon the plan of using a powerful coil giving the d'Arsonval current¹⁵, in order to produce electro-thermic coagulation. A considerable amount of experimental work both as to electrodes and the heating property of the current was necessary, before I could satisfy myself as to the safety of using this type of current in the abdominal cavity. By this time my patient had become very seriously reduced on account of recurrent hemorrhages from the mass. I finally applied the current and found it possible by actual thermometer tests to obtain a rather continuous temperature of 150 deg. Fahr. throughout the large abdominal mass and

¹⁵Pfahler, Geo. Electro-thermic Coagulation, etc. Surgery, Gynec. and Obstet., vol. 19, p. 783.

the contiguous small intestine, and this temperature was continued for forty minutes without apparent harm to the structures. The patient, however, died of shock some three hours after she left the table, and I am unable to give further data regarding the inhibitory value of this form of heat when applied directly to neoplasms in the abdominal cavity.

I will say however that the patient remained in splendid condition during the time the current was passing through the abdominal mass, and it is possible that the heat in such close proximity to the splanchnic plexus was responsible for this good condition during the entire time consumed in the operation.

Having recently learned from Dr. Crosby that in the use of diathermy with the d'Arsonval current the point of greatest temperature occurred somewhere between the anode and cathode, and that the greater the resistance offered the higher the temperature, I decided, with the assistance of Dr. Crosby and his large alternating machine, to first try this method of tissue coagulation on large solid pieces of beef, and also while making these experiments to secure control and comparative tests with the Percy cautery irons.

The meat chosen for this experiment was the thick, fibrous portion known as the rump. It was very solid, free from fat, and weighed five and three-fourths pounds. It was nine inches long, seven inches wide and had a maximum depth of four inches, a minimum depth of two and a half inches, with an average of three inches. Its temperature by thermometer reading was 40 degrees Fahr. when commencing the experiment. Five dairy thermometers were plunged deeply into the mass about equidistant from each other, and three cautery irons in a like relation, and the current turned on.

Thermometer number three, which registered a high temperature, was in the center of the mass, while number five was in the closest proximity to a cautery iron. The heat was constant and continuous for one hour, and after this length of time it was found that the minimum rise in temperature at thermometer number one was 12

deg. Fahr., while at number five it was 80 deg. Fahr., and the average temperature in the mass as registered by the five thermometers was 88 deg. Fahr., or a rise of 48 deg. Fahr., in one hour. The table with the temperature readings at each five-minute period is herewith appended.

Time.	Thermometer No.	1,	2,	3,	4,	5.
7:15	40	40	40	40	40	40
7:20	40	40	40	40	40	40
7:25	40	40	40	40	40	40
7:30	40	40	40	40	40	40
7:35	40	42	42	42	44	44
7:40	40	44	46	50	50	50
7:45	42	48	52	56	58	58
7:50	44	52	60	62	64	64
7:55	46	58	74	68	80	80
8:00	48	60	108	72	94	94
8:05	52	64	110	78	104	104
8:10	56	70	108	78	120	120
8:15	60	72	106	82	124	124

In contrast with the heat generated by the cautery irons, the same mass was used with the d'Arsonval current, after a twenty-four hour refrigeration; the machine registering 2100 milliamperes. Two flat electrodes were applied to the opposite sides of the mass. The temperature of the mass was again at 40 degrees Fahr. when the current was applied. The rise in temperature was decidedly more rapid than when the cautery irons were used, and the evenness and uniformity of the rise throughout the entire mass was also noticeable; for in thirty minutes after applying the current the maximum temperature was 162 deg. Fahr., or an average rise of 72 deg. Fahr. in thirty minutes. The readings of each five-minute period are also here submitted.

Maximum milliamperes used 2100.

Time.	Thermometer No.	1,	2,	3,	4,	5.
9:21	40	40	40	40	40	40
9:26	60	52	50	50	46	46
9:31	84	60	62	60	56	56
9:36	104	70	70	70	62	62
9:41	112	76	80	78	66	66
9:46	128	82	90	88	73	73
9:51	142	90	100	98	80	80
9:56	162	98	108	108	88	88

In a second experiment with the d'Arsonval current upon a solid piece of beef weighing three and a half pounds and measuring $3\frac{1}{2} \times 4\frac{1}{2} \times 5$ inches, with 2000 milliamperes registered on the machine, it was found

possible to raise the temperature of the entire mass to an average of 131 deg. Fahr. from its original temperature of 40 deg. Fahr., or in other words the temperature of the mass was raised 90 deg. Fahr. in thirty-four minutes, without carbonizing the tissues in the least degree.

Since performing the above experiments the writer has found in recent literature an article by Cumberbatch¹⁰, who gives in detail the technique of diathermy as practiced in St. Bartholomew's hospital in the treatment of these inoperable malignant growths. Cumberbatch says: "The electrodes must be placed in contact with the part before the current is turned on, and should be continued until the liquids in the tissues boil, when the malignant tissue is coagulated, and the blood vessels and lymphatics are sealed to metastatic invasion." This extreme temperature, in the light of Percy's experiments and therapeutic results, seems quite unnecessary and ignores one of the strong points in favor of the deep therapeutics, namely that of temperature susceptibility on the part of malignant cells.

Summary and Conclusions.—Modern investigations seem to prove conclusively that heat is one of the most effective therapeutic means we have in the control of cancer, provided it is properly applied. The subsequent use of the X-ray with cross-fire applications of the rays from a hard tube is no doubt good after-treatment. The source of the heat may be varied from hot water to the actual cautery, but it must be constant, long-continued and free from insulation, in order to spread evenly a temperature of 120 to 150 degrees Fahr. throughout the mass.

In applying the treatment to carcinoma of the pelvis or other easily-accessible structures, the Percy cautery irons are probably most satisfactory. The abdomen, as Percy advises, should always be opened in lesions of the cervix and uterus, and the assistant's gloved hand should grasp the uterus in order to determine the position of the iron, the location of the lesion, and the degree and diffusion of the heat into and about the

uterus. The limit of tolerance to heat of the gloved hand is below the point of heat at which necrosis of the tissues occurs, and this temperature tolerance is somewhere about 120 deg. Fahr.

The use of heat with the Percy irons as a method of treatment is proving very satisfactory in the inoperable cancers of the lip, face, neck and breast, and I believe it worthy of use as a preliminary treatment in border-line cases of this class, as well as in pelvic lesions. This should be followed later by radical excision, thereby doing away with the possibility of metastatic recurrence.

The experiments which I have made on large masses of beef, the results of which are herewith appended, lead me to believe that in the d'Arsonval current we also have a very potent and serviceable means of obtaining the same or even better results in tumor masses located in some of the more inaccessible portions of the body. This conclusion is based upon the fact that in every test made, the d'Arsonval current raised the average temperature of a given mass twenty-four degrees Fahr. higher than the cautery irons did, in just one-half the time consumed by the latter. I desire to acknowledge the valuable assistance of Drs. F. H. Carpenter and L. G. Crosby and Mr. Paul Muckle in the treatment of these cases and in the experimental work.

DISCUSSION.

William A. Kickland, Fort Collins: I have read and listened to Dr. Tennant's most excellent paper with a great deal of interest, and there is nothing I can add that will be of much value. Until we know the cause of cancer we are working in the dark as to its most effective cure. It is proven, I believe, without a question, that there is a difference in the vitality of the cells of a new growth and that of normal tissue. This makes it possible to use any one of a number of agents to destroy the cancer cells. Arsenic, zinc chlorid, the Roentgen ray, radium, heat, etc., are not selective in their action in the strict sense of the term, but they destroy every living cell which comes under their influence, the weaker ones first, and finally the normal cells. Just how many degrees of heat there are between the temperature which will cause the death of the abnormal cell and that of a normal one is perhaps still a question. Dr. Percy says that a cancer cell dies at 113° F., while a normal cell lives at 131° F.

[We know that in the application of heat to the lower forms of life, protoplasmic activity is increased up to 116°, that at 120° all activity stops, and that the protoplasm will not recover after

¹⁰Cumberbatch, E. P. Diathermy, *Archives Roentgen.*, 1915, vol. 19, p. 282.
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being heated to 125°. With this in mind, it seems to me a very delicate matter to kill the abnormal cells at their varying distances from the source of heat without destroying the cells of some vital organ, such as the bladder, ureter, or an intestine.

I believe that, as a preliminary treatment, the application of heat may make some inoperable cases operable, but as a means of obtaining a permanent cure it is not more selective in its action than is a scalpel in the hands of a competent surgeon.

William M. Spitzer, Denver: I believe with Dr. Tennant that he will be able to prove in the course of time that heat is very effective in the treatment not only of inoperable but of operable cancer. Byrne, of Brooklyn, treated not only inoperable but operable cancer by the heat method, and I had an opportunity in those days to see some of his results.

My reason for entering this discussion is to call your attention to a very large field of application of heat in cancer. Cancer of the bladder advances without deep infiltration for a long time. Later, of course, it infiltrates, but until this time arrives, we can treat it very successfully with heat. This is something we have been able to do in no other way, because in cancer of the bladder in 95 per cent of the cases we have failed to arrive at any result except death. In the last five or six years we have been able to cure many of these cases by the application of heat to these cancers intravesically. We have been able to apply heat for many years, but unsuccessfully. We did use the electric cautery in the bladder, applying a platinum wire through the cystoscope; but the trouble was that the bladder could not be kept dry, and as soon as the current was turned on steam formed; we could then no longer see, and we had to desist for fear of doing harm.

Today we use the d'Arsonval or Oudin current, which furnishes an immense voltage with a very low amperage, applied through the cystoscope to the growth itself, and by this means we bake or cook the cancerous tissues. The bladder can be filled with water, and under the eye the tissues are seen to blanch and cook. In this particular case it does not make any difference what the temperature of the heat applied is, as it does in Dr. Tennant's work, as we are dealing strictly with the tumor itself. We touch the tumor with the wire, without touching the normal tissues, and turn on the current. It seems furthermore that there is a difference of electrical conductivity between normal and cancer cells, so that the current does not affect normal tissue, but does affect the cancer at once. My explanation may be wrong in this regard. I have had ten cases of cancer of the bladder under treatment, in six of which there has been no recurrence. Three of the patients have died. The other cases I believe to have been cured. In these cases the infiltration had extended into the muscular coat.

I want to call attention again to the immensity of the field and the probable good that will ensue from the application of heat to both inoperable and operable carcinoma.

Gasper F. Hegner, Denver: In observing cases of cancer treated with low grade temperature, I have been struck with the marvelous results that have been obtained with black heat in those cases in which you would not think of approaching with the knife. That heat does act in a most favorable way is beyond question.

Resistance of the normal cell depends in a large measure, though not entirely, upon its inherent vitality, and upon the active or arterial

circulation and tissue fluids. We all know that malignant cells may be extremely vascular, but the vascularity depends entirely or almost entirely upon the venous content. Low grade heat, if applied at a temperature not exceeding 150°, will not affect actively the circulating blood. If it goes beyond that, it causes more or less destruction of the vessel wall and coagulation. If the temperature is kept below that, it will kill all cells or nearly all those having the poorer arterial circulation and a larger venous content, but the healthy or normal cells having arterial circulation cannot be permanently affected. That is the more rational explanation of the efficacy of the low grade temperatures in the treatment of malignant growths.

C. E. Tennant (closing): I am very glad to have heard the discussions of Drs. Spitzer and Hegner. I am more and more convinced of the efficacy of heat after several years of experience with it. As to the use of the knife and the d'Arsonval apparatus, both have their places. In the border-line cases, we can make a clean-cut demarcation line with the scalpel, but we do not know whether or not there may be a few involved lymph nodes just beyond the incision. We cannot see or feel them. We do not know they are there, but we do have a high percentage of return of malignancy after the knife excision. On the other hand, when heat is used the temperature is raised in the tissues far beyond the area to which we are applying the heat directly with our instruments. By use of the d'Arsonval current, heat can be transmitted a distance of five or six inches and the temperature controlled absolutely, by the use of a thermometer, to any degree we desire. In this manner we can control practically all of the malignant structures within that area for five or six inches. Granting that the actual cautery does destroy some of the tissues, is it any worse than the absolute destruction caused by the use of the knife? There is absolute destruction by the knife, and we all recognize the fact that when dealing with cancer we do not consider the cosmetic effect, but first take into consideration the removal of all the cancer-bearing tissue, and then bring together what we have left and make it as serviceable as possible. With heat we can control the destruction more satisfactorily than with the knife. I grant you that there are many cases in which the knife should be used, but there is a better method of controlling some forms of cancer, and that is by heat, for the heat is under definite control. If with the d'Arsonval current we absolutely destroy the sensitive malignant cells, and yet retain the normal structures, how much better is it to use this means than to leave certain hidden malignant nodes which so frequently escape the knife?

Tuberculosis in Negroes. The weekly bulletin of the New York Department of Health for April 8th, commenting upon the subject of the susceptibility of the negro to tuberculosis, points out that this susceptibility is due to the fact that the negro has not been exposed to the disease for a sufficient length of time to acquire racial immunity; and that the physical surroundings of the average negro, unsatisfactory though they may be, compare not unfavorably with those of the Polish Jew, although the latter has a lower death rate from tuberculosis than any other race.

DEEP ROENTGEN THERAPY OF BENIGN AND INOPERABLE MALIGNANT CONDITIONS BY IMPROVED TECHNIQUE.*

L. G. CROSBY, M.D., DENVER.

The great strides which have been made in the field of roentgenology during the last eighteen or twenty months, are the only excuse for the presentation of this paper.

It is the writer's intention to omit the greater part of those points connected with the subject of the Roentgen ray which have become history, and as briefly as possible to mention the important features wherein the "deep Roentgen therapy" of today differs from that prior to two years ago.

It seems that a clearer understanding of conditions may be had if, before passing on to the subject of technique and results, brief mention is made of some of the physical properties of the Roentgen ray.

It is well known that Roentgen rays are waves of ether, and occupy a place in the spectrum differing only from rays of light in the visible part of the spectrum by the length of their waves, or in other words by the frequency of their vibrations, which are approximately 10,000 times more rapid.

Roentgen rays are commonly spoken of as hard, medium, or soft rays. The terms are only relative ones, and signify a degree of penetration which is in proportion to the frequency of their vibrations or in inverse proportion to their wave length, the hard rays having the shortest length and being the most penetrating.

It is known that a beam of Roentgen rays is a mixture of rays of different wave lengths, and consequently of different penetration, and that this quality is due, other things being equal, mainly to two factors, namely, the atomic weight or hardness of the anticathode and the voltage of the current with which the tube is excited. The constancy of the voltage depends on the stability of the resistance of the tube, and steadiness of the current supply.

Tungsten is at present being almost universally used as target material, and is of uniform hardness. Hence the heterogeneous

character of the mixture of Roentgen rays composing the beam will depend upon the stability of the tube and the constancy of the current exciting it.

Results in the therapeutic use of Roentgen rays lead us to believe that if it were possible to segregate these rays into bundles of homogeneous rays, we should find ascribed to the several bundles a marked difference in their biological effect. This view is supported by the fact that many superficial lesions which do not yield to treatment with rays of low or medium penetration will disappear when rays of high penetrating quality are used. The only method of accomplishing this which we at present have is by the proper regulation or setting of our tube, and filtration of the rays, thus absorbing the less penetrating ones, which would be absorbed in the superficial structures overlying the lesion upon which we wish to concentrate our energy.

The use of filters is not a new idea, as for a number of years they have been in quite general use in deep therapy. Pfahler of Philadelphia was one of the first to report the advantages of their use. He began with paper, later used leather, and then aluminum, which was gradually increased in thickness to one, two, and three millimeters. At present aluminum filters of three millimeters are in quite general use. The absorption power of one millimeter of pure aluminum is shown to be equal to that of a layer of water, or soft tissue, of approximately one centimeter thickness. It must be understood that multiplying the thickness of the aluminum filter does not correspondingly diminish the number of rays in the beam, since the first millimeter will absorb more of the soft rays than the next two millimeters, and from the third to the seventh millimeter there is little loss in the number of penetrating rays.

The biological effect of the Roentgen ray upon normal or pathological tissue is considered to be in proportion to the amount of absorption which takes place in the cells lying along their path, and depends somewhat upon the degree of penetration or rapidity with which the rays pass through the tissues.

This paper has little to do with the discus-

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

sion of superficial lesions, and it will readily be seen that the use of rays from a tube of low penetration and low voltage, and one whose rays would be absorbed by two or three millimeters of aluminum, would be wholly inadequate for the treatment of lesions lying eight or ten centimeters below the surface. It has been shown that rays produced by a tube the tension of which does not back up a spark of more than eight inches have almost no value in deep therapy, and until the development of the Coolidge and hydrogen tubes, during the past twenty months, we possessed nothing stable enough to give a definite dose in a given period of time.

The term "dose" as here referred to implies such a quantity of Roentgen ray as will produce an erythema, and most often is designated by the term 10X or 5H, or one of the other methods of measurements. Kienbach has standardized a photographic paper which is cut into strips and placed in light proof envelopes. These little envelopes containing the strips are placed in the center of the field and are exposed to the rays during the treatment, at the end of which time they are taken to the dark room and developed according to a determined formula. Their color is in the brown and the shade will depend upon the quantity of rays absorbed. After being fixed and washed, the strip is compared with a scale of shades which are marked from 1X to 10X, X representing a unit. A double erythema dose is represented by the term 20X. Another equally popular method of measurement, and somewhat more simple, is by means of pastilles of platino-cyanide of barium, which are protected from the light, and whose change in color runs in shades from a light green through yellow and deep orange, according to the amount of Roentgen ray exposure. If these pastilles are measured with the Holtzknecht radiometer, an erythema dose is designated 5H, and by the fourth point on the Hampson radiometer. The latter instrument is rather our choice at present, on account of its simplicity. The pastilles are placed upon the skin in their protective covering, and at the end of the treatment their shade is determined in the

dark room, by the light of a sixteen candle power carbon filament electric bulb.

One must appreciate the vital importance of the filter, for if what would be an erythema dose if given through a filter be given without a filter, it will produce a sloughing burn of the third degree, and will prove most serious. Be it also noted that the biological effect of a filtered dose represented by 10X or what is called an erythema dose will not produce an erythema, and that a double or triple dose of these filtered penetrating rays may be administered with slight or no skin reaction, other than some possible pigmentation. Thus we are able to attack the deepest lying structures of the body with a relatively large quantity of penetrating rays which lose but a small part of their intensity after passing through a filter.

Another factor which we must briefly consider is that of secondary rays. It is known that the impinging of Roentgen rays upon any substance gives rise to the generation of secondary rays.

These rays are of very little penetration but must be guarded against, for with the filter near the skin they may aid in the production of an erythema, and thus interfere with the giving of as large a dose over a given area as could otherwise be done.

The size of the area treated and the distance of the target from the skin are important, as the density of the rays varies inversely with the square of the distance. A skin distance of six and one-half or seven inches has become quite generally adopted, and the advisability of treating deep lesions through portals of two and one half to three and one half inches square is shown, since by treating through several of these skin areas the rays may be focused on a deep lying neoplasm, and in this way an erythema dose may be delivered to the deep structures. And further, in treating carcinoma of the breast, only the central part of the area receives the intense radiation, so that if large areas are treated at a time the effect must be very uneven. When as many of these areas as seems advantageous have been exposed consecutively it constitutes a series or what is sometimes termed a full dose.

The biological effect of the Roentgen rays

is cumulative within certain limits, so that when an area has received an erythema dose it is not safe to give any more rays over this area within a period of three weeks, unless the case is an urgent one which demands more heroic treatment, and justifies some risk in setting up a reaction.

The Roentgen therapy of today differs from that of yesterday in the use of a very much more penetrating quality of ray through filters, and in the quantity of the dose. The Roentgen ray, like many other powerful remedial agents, is known to be stimulating if given in small enough doses, but on the other hand if given in sufficient quantity it is destructive, and the last twelve months have witnessed to a large extent the passing of the so-called "fractional dose"; and through the careful use of filters and rays of higher penetration, unassociated with any skin reaction, roentgenologists have been encouraged to double and treble the size of the dose which they had previously considered as bordering on the line of safety, and they are now reporting results in many cases which were formerly considered unfavorable for this kind of therapy.

The development of the Coolidge tube and its quite general use during the past eighteen months has given an impetus to the manufacturers of apparatus in the construction of coils and transformers of a capacity formerly considered far beyond that of usefulness. Today we require apparatus capable of operating a tube with a 10-inch spark gap, for any desired length of time, and there are those who believe that the limit will be far above this.

Authentic reports have already become too voluminous for me to attempt a resumé of the literature, and only brief mention will be made of a few. It is especially interesting to note the absence of claims of cures, and the conservatism expressed by those reporting improvement and symptomatic cures. A general consideration of these reports shows little or no attempt on the part of roentgenologists to invade the field of the surgeon, but a disposition to work hand in hand with him, to reduce the number of recurrences in those cases of malignancy which come to him early and are operable, and to give such

relief as is possible to those poor unfortunates whom the surgeon sees too late to be able even to offer much hope of prolongation of life. By the administration of the Roentgen ray some inoperable cases of malignancy, especially carcinomata of the breast, may be rendered operable, and such cases should later receive postoperative treatment.

The percentage of favorable results in some gynecological conditions, particularly myomata, menorrhagia, and distressing conditions associated with the menopause, is so large that it is demanding an ever increasing consideration from the surgeon who has the welfare of the patient at heart.

In the June number of the *Archives of Radiology and Electrotherapy*, of this year, Bumm and Warnekros report fourteen cases of mammary carcinoma. Twelve were inoperable recurrences. One died during treatment, and the other thirteen resulted in complete disappearance of the disease.

In carcinomata of the ovaries, results have not been very gratifying.

Seven cases of carcinoma of the uterus are reported, in all of which the disease has been influenced, the result amounting to marked improvement or symptomatic cure.

Cures of fibroids reported by various observers are estimated at from 75 to 100 per cent. With the improved technique of the past few months, the chances of cure seem conservatively estimable at from 85 to 90 per cent. From statistics the chances of cure in young persons are not considered so great as in patients of more mature years.

In Graves' disease, Pfahler reports marked amelioration of the tachycardia, greatly improved general condition of the patient, and in about 50 per cent. or less, a reduction of the exophthalmos, and in the size of the thyroid gland. Similar results are reported by others.

In inoperable sarcomata and carcinomata of bones, a number of striking symptomatic cures have been reported by various observers.

In many of the cases we feel that diathermy or fulguration is of inestimable value, in conjunction with the Roentgen ray, but we cannot feel that its use alone offers

the chance of relief that is offered by the combined method, since the Roentgen ray covers a much wider area of the body, thereby decreasing the tendency to recurrence or metastasis.

In our experience the Roentgen ray has shown marked benefit in inoperable recurrences in the region of the breast, in inoperable cancers about the face involving the bone, in reducing the size of the spleen and improving the general condition in leukemia, in reduction of the enlarged glands in Hodgkin's disease, in fibromata, in menorrhagia, and in producing the apparent disappearance of a large recurrent sarcoma within the abdomen. We have also seen the entire disappearance of physical evidence of an inoperable carcinoma of the uterus, under the use of Roentgen ray and subsequent application of diathermy by Dr. Tennant, who referred the case and reports it in his paper on the use of heat in inoperable cancer. In one case of Graves' disease the rays were effective in ameliorating all of the symptoms and reducing the size of the gland, and in other cases, given but a few treatments, a marked reduction of the tachycardia occurred.

Conclusion: 1st. In view of the authentic reports of various observers as to deep Roentgen therapy, it seems advisable that all cases of inoperable malignant disease be given the benefit of any possible help that may be derived from it.

2nd. As this deep therapy has proven that it can cause a disappearance of malignant masses, its postoperative use should be universally resorted to.

3rd. In Graves' disease, splenic leukemia, and Hodgkin's disease, it is a valuable adjunct to other lines of treatment.

4th. In menorrhagia and myomata, the Roentgen ray should be employed in any case in which an operation seems ill-advised.

142 Metropolitan Building.

DISCUSSION.

Samuel B. Childs, Denver: I shall show you three patients this afternoon to demonstrate the results we have obtained by deep Roentgen therapy in some of our cases of inoperable cancer.

The first case is a patient of Dr. W. B. Craig, who removed a large gland from the left side of her neck, and microscopic examination demonstrated it to be a carcinoma. He also removed a

piece of the left tonsil and this was proved to be a carcinoma. He then removed the glands in the neck as thoroughly as possible; you can see the scar of this operation, but no attempt was made to remove the tonsil. She was referred to us in July, 1915. Her age is fifty. An examination showed an enlarged ulcerated left tonsil and an ulcerated area involving the left side of the tongue. There were several enlarged indurated glands present in the anterior triangle of the left side of the neck. The patient swallowed with great difficulty and was losing flesh and strength.

From the ordinary treatment by surgical methods the case appeared hopeless. She was sent to the hospital and under general anesthesia the left tonsil and base of the tongue were thoroughly fulgurated, and deep Roentgen treatments were commenced as soon thereafter as possible. She has now had several of these series of deep treatments in the manner Dr. Crosby has described to you. Her condition at the present time, three months after commencing the treatments, is greatly improved; the tonsil has diminished markedly in size, the large ulcerated areas on the tonsil and tongue have healed, and the glandular infiltration in the neck has greatly diminished. There is still present an indurated sub-maxillary gland about one-third its former size, and the induration of the tonsil can be felt on pressure behind the angle of the jaw. She eats without pain and has gained seven and one-half pounds in the past three weeks, and says that she feels as well as ever.

We show this case to demonstrate the great improvement both in the local and general condition that has followed the combined method of fulguration and deep Roentgen therapy. The treatments will be continued for an indefinite period of time, and I shall be glad to report at a subsequent time the ultimate results obtained.

Case 2. This was a case of inoperable carcinoma, involving the soft tissues of the left side of the face and also the left malar bone, in a man aged 52. It is a case from the County Hospital. Dr. Freeman curetted the entire area, a microscopic examination was made of the curetted tissue, and the diagnosis of carcinoma involving the soft parts as well as the malar bone, was made. The patient came under my observation in February, 1915. As Dr. Freeman regarded the case as absolutely hopeless for a cure by surgical intervention, he referred it to us for deep Roentgen therapy. You can see the result from the deep Roentgen treatment of this carcinoma. The area involved by the carcinoma, an area as large as the palm of the hand, had entirely healed. He will be kept under observation for quite a period of time, and with an occasional series of treatments I believe we can probably keep the disease under control, if not effect a symptomatic cure.

Case 3. Patient aged about 35. This case is an important one and great credit belongs to Dr. Grant for the skillful operation performed by him in January, 1915. The patient first noticed a mass in the right pelvis in October, 1913. Dr. Grant made an exploratory incision in December, 1913, and found in the right inguinal region, deep in the pelvis, so extensive a mass that it was deemed impossible to remove it. He made a provisional diagnosis of sarcoma. The man was given Coley's serum three times a week, and was referred to us for deep Roentgen treatment. At that time we did not have a Coolidge tube, but we gave him the hardest ray we could administer for several series covering a period of several months. In

January, 1915, Dr. Grant made a second exploratory operation and at this time was able to remove the mass, which was found to be smaller than at the time of his first exploration and was encapsulated. Microscopic examination showed it to be a teratoma of an undescended testis. After the operation Coley's serum was continued. The patient went back to his position in the hills, and returned to Denver in June, 1915, with a recurrence in the pelvis. The recurrence was quite extensive; the veins in the upper abdominal wall were nearly as large as my little finger. He weighed one hundred and thirty-nine pounds, and was weak and prostrated. He was referred to us again by Dr. Grant for deep Roentgen therapy. At the present time he has had five series of treatments with the Coolidge tube, weighs one hundred and sixty-four pounds, and feels perfectly well; and all evidence of the growth has disappeared, the veins in the upper abdomen having assumed nearly their normal size. Dr. Grant will be glad to have any members of the society who care to examine this man come to his office, after the close of this session.

There are many cases of cancer which are so extensive and have persisted for such a length of time that no treatment known at the present day can probably cure them, but these cases should have the benefit of deep Roentgen therapy in the hope of at least ameliorating the pain, lessening if not removing the fetid discharge and possibly in some of them establishing a symptomatic cure, as shown you in these cases today. It is of even greater importance that all cases of cancer involving the breast and other deep structures be given the benefit of this deep Roentgen treatment as soon after the operation for their complete removal as possible. In this manner I believe we shall be able to diminish greatly the mortality of this dread disease.

Crum Epler, Pueblo: The matter of deep Roentgen therapy, as the essayist properly said, is not an effort upon the part of the Roentgenologist to invade the field of the surgeon. The use of the deep Roentgen ray therapy in the treatment of deep-seated lesions is twofold: It is, as considered in the paper, possibly curative, or at any rate relieves the gravity of the trouble temporarily. There is another condition which the doctor did not speak of that it is frequently used in, and that is preparing the patient for operation; then the use of deep therapy, in a certain class of cases, ante as well as post-operative. Those are the two places for such treatment. In a case which is non-operative from a surgical standpoint, where operation would not do any good, and the pathology is very painful, the pain can be relieved. In certain forms of non-malignancy, where there is great hemorrhage, particularly of the female uterus, this hemorrhage can be controlled, and these are a favorable class of cases to treat prior to hysterectomy. The relief of pain in operable cases of cancer is a God-send to the patient, and it can be done by this method of treatment.

Tuberculosis of bone I do not think the doctor spoke of as being one of the favorable instances in which the patient can be at least temporarily relieved, and brought into a condition whereby he can have probably a more successful surgical procedure performed upon him.

I desire to mention a case in a man 70 years of age. On June 1, 1914, this patient came to me complaining of pain in the abdomen, inability to eat, his food distressing him, nausea and vomiting and having almost the symptoms referred to

in Dr. Childs' paper. He had enlarged inguinal glands; he had enlarged glands in the rectum, and he felt that the end was near. He had a mass in the right side at the time he came to me for diagnosis. I made a physical examination first, then had a laboratory examination and blood count, and found his blood count was about like this: He showed 4,600,000 reds and 15,300 whites. The case went along for two or three days until they made up their minds what they were going to do. This was the first two or three days in June. A consultant agreed with the opinion I had given that the patient had cancer of the cecum. On account of time, I will simply say the patient decided to take deep Roentgen therapy. This was the first case in which I had an opportunity to use the Coolidge tube, which was June 4 or 5, 1914. I began by the cross-fire method, giving massive doses at each sitting through section areas over the tumor mass under compression. I gave him with the Coolidge tube about 65 milliamperes, taking about six and a half to seven inches of the spark-gap. On June 15, 1914, about two weeks after I began treatment, the blood count was found to have been reduced to 4,045,000 reds, and the whites were down to 11,500, although the whites were 15,300 at the time I began treatment. At this time massive doses were given the same as before. There was considerable reaction after the first dose for a day or so. After this dose there was but little reaction, and I allowed him to go home until the 10th of July. On the 10th of July the blood count showed 4,500,000 reds and 7,800 whites. The patient said he felt well at this time, and after this particular treatment there was no reaction that the patient complained of, and in the meantime he was going about his duties. He gained seven pounds in weight during the treatment, was eating well and sleeping well.

I have kept this patient closely under observation for the last sixteen months, and while there is still a small tumefaction around the region of the cecum, it gives him no pain, and he is well to all intents and purposes and perhaps is cured.

L. G. Crosby, Denver (closing): I wanted to mention more in my paper about the responsibility associated with this deep-treatment work, because we feel it is of vital importance. This is so great in connection with deep therapy, and the use of these massive doses, that one person should not assume all of the responsibility of giving these deep treatments, and consequently one should arrange for two people to be present during their administration, because if it should happen that filtration is not carried out according to certain definite lines, our results are going to be serious.

Another thing is the measurement of doses. If we would treat these cases along proper lines of safety, or possibly sometimes pass over these lines in giving doses in extreme cases, we must know we are giving approximately accurate doses, just as we know we are giving one-fiftieth of a grain of strychnia; consequently the method of measuring dosage, while it is not exact, is approximately so, and with the present apparatus we can standardize our dose, and repeat it from time to time, always checking up the quantity we are giving.

I should like to have emphasized more the advantages to be gained by the postoperative treatment of many surgical cases, because we have referred to us, perhaps more than any other one condition, recurrent carcinomas of the breast, and we know from reports, and from our own

work, that the danger of recurrence in these cases is not nearly so great with the combined use of the X-ray following surgical treatment as it is without it.

I want to mention one case of splenic leukemia we are treating now. The patient had one series of treatments three weeks ago, and he told us yesterday that his abdomen was five inches smaller in measurement, and that his blood count revealed that the whites had dropped from 900,000 down to 300,000. I simply cite this as the most probable effect of the treatment in these cases.

THE INTRATRACHEAL INSUFFLATION OF ETHER.*

KARL F. ROEHRIG, M.D., DENVER.

Intratracheal insufflation was first described by Meltzer and Auer in 1909 as "continuous respiration without respiratory movements". It is a method by means of which a mixture of ether and air is driven under pressure into the trachea through a tube introduced through the larynx. It differs from all other methods of anesthesia in that it combines with the anesthesia a thoroughly efficient system of artificial respiration, and the means of providing positive pressure in intrathoracic surgical procedures, doing away with the positive and negative pressure cabinets previously used for intrathoracic surgery.

For a number of years physiologists knew that animals could be kept alive for a considerable length of time by blowing fresh air into their lungs, even after all respiratory movements had been abolished by curare, but it remained for Meltzer and Auer to develop this principle into this very satisfactory method of anesthesia in man.

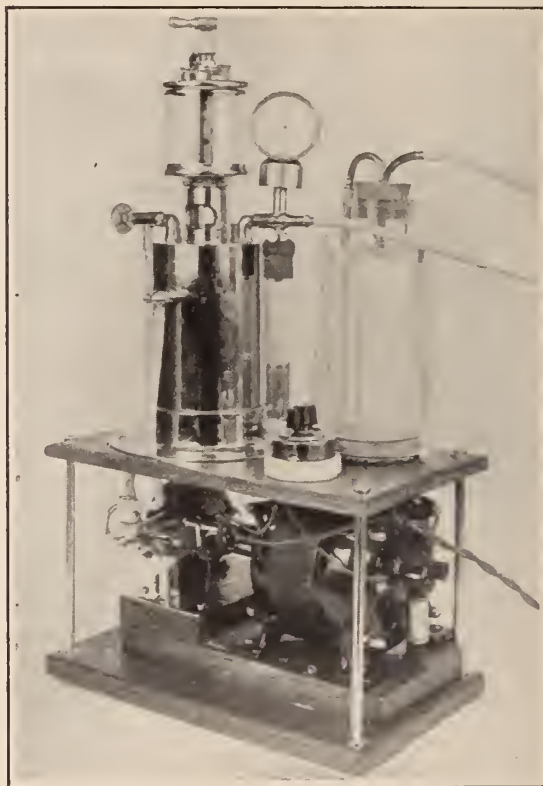
For the production of this method of anesthesia, a number of more or less complicated machines or apparatuses have been devised, notably those of Elsberg, Janeway, Shipway, and Ehrenfried. In my work I have used a machine invented by Dr. A. W. Stahl, of Denver, which in my opinion has all the good points of the other machines minus the complicated mechanism, bulk and weight of the various other forms of apparatus.

Dr. Stahl has very kindly furnished the following description of the mechanism:

*Read at the annual meeting of the Colorado State Medical Society October 5, 6, and 7, 1915.

"This apparatus is composed essentially of two parts.

"Part one consists of a 1/30 horse power, alternating current motor that is connected



STAHL-ROEHRIG APPARATUS FOR INTRATRACHEAL INSUFFLATION.†

directly with a small dental rotary air compressor (this compressor also serves as the aspirator). In contact with the motor axle is a small rubber-tired wheel, which by turning a worm revolves a disk, that in turn moves a spoked wheel a slight distance with every revolution. This spoked wheel automatically opens for a short time and closes a valve, thus releasing the intratracheal pressure at regular intervals. All of these parts are securely fastened to a small wooden platform that stands upon four rubber feet (the rubber taking up the vibration and deadening the noise of the motor). The inlet of the air compressor is connected by rubber tubing to an aspirating bottle. A rubber tube from this bottle enables the operator to drain the oral cavity of mucus, blood, etc., much more readily than with a sponge. The outlet of the air compressor is connected by

†To be had from the Durbin-Muckle Manufacturing Co., Denver.

rubber tubing with a small regulating valve at the top part of number two. (The outlet is also supplied with a regulating device.)

"Part two is composed of a metal cylinder, sealed at both ends set upright. The interior of this cylinder is divided by a diaphragm into an upper one-third or vaporizing chamber, and a lower two-thirds or water and heating chamber. The heater is a large tube projecting upward from the middle of the bottom of the lower chamber, and contains an electric lamp of low candle power. This lamp can be replaced from the bottom. At the top of the cylinder is an ether container and dropper. This is an ordinary oil dropper such as is used in a gas engine to drop against pressure. The ether and drop can easily be seen at all times and the drop can be accurately regulated and controlled by the thumb screw and the lever at the top of the container. A small opening permits the replacing of the ether. At one side of the top of the cylinder is the air valve that is connected with the air compressor of part one. This valve communicates with a tube that runs down through the cylinder to the bottom of the lower chamber, thus forcing the air to bubble up through the warm water, causing it to become heated, moistened and washed. A small opening in the center of the diaphragm at the top of the lower chamber permits the air to escape into the upper chamber. Here it mixes with the vapor of the ether that has dropped upon the warm diaphragm and is carried out to the delivery tube through an opening in the top of the side opposite the inlet valve. This tube is connected with a Tyco's manometer that registers the pressure in millimeters of mercury. Here also is attached the safety valve which is composed of a small glass tube inserted into a test tube containing mercury; the end of the tube being placed below the surface of the mercury to the number of millimeters which the intratracheal pressure is not to exceed. A second safety valve is located in the top of the cylinder and consists of a coil spring and ball valve that can be regulated to exhaust at any desired pressure. A small valve projects from the side of the upper chamber of the cylinder. To this is connected a rubber

tubing that runs to the automatic cut-out valve at the side of the motor. All metal work of this apparatus is made of brass and is nickel plated."

In this method of anesthesia, warm air is caused to pass over or through ether, or warmed ether vapor, and is driven under pressure through a catheter which has been introduced through the larynx to the bifurcation of the trachea. The catheter used is about one-half the size of the trachea, so that sufficient room for the return of air between the wall of the trachea and catheter may be obtained. The volume of air under pressure of 15 to 25 mm. of mercury automatically reduced every 45 seconds in my method is ample to fulfil the necessary respiratory function even in the absence of respiratory movements.

The explanation is rather simple. Respirator movements only change the air in the larger bronchi and trachea, while real respiration is an exchange between the tidal and the alveolar air by diffusion. And now, as Shipway states, "by cutting out the greatest part of the dead space, that is, the space between the atmospheric air and the alveoli, and by supplying a stream of air under pressure at the bifurcation, a rapid diffusion of gases within the bronchi results".

I consider this the safest method of anesthesia because it is accompanied by artificial respiration. The respiratory centre is still active and the movements of respiration still continue but are very slight and have little, if any, bearing upon the complete aeration of the lungs. One may readily see that this artificial method of respiration could be very efficacious in such cases as opium poisoning, drowning, etc., where prolonged artificial respiration is necessary.

I classify the indications for the use of this method in the following manner:

1. In thoracic surgery, it is particularly indicated, for it prevents collapse of the lungs. As an example here I may cite a case wherein I was privileged to give an intratracheal anesthetic to a man on whom an Estlander or Schede operation with decortication of the right lung was performed. This lung had been practically completely

collapsed. As it was decorticated, one could see it expand, and when the decortication was complete the lung expanded to the chest wall and remained so.

2. In surgery of the neck, where it becomes advantageous for the anesthetist to be out of the way, and in those cases where it is ordinarily extremely difficult to give the anesthetic because of the patient lying flat on the abdomen, such as laminectomy, sub-occipital craniotomy, and even kidney work.

3. It is also indicated in operations through or about the mouth, such as laryngeal, pharyngeal, or esophageal procedures. The stream of air and ether vapor which uninterruptedly escapes from the larynx blows out any blood that might run down the throat into the trachea. It will be found unnecessary, therefore, to pack the pharynx as has been done heretofore in such cases as removal of the tongue, excision of the jaws, etc. It consequently can be easily appreciated, too, that these operations are made much easier for the surgeon when the patient is anesthetized by this method, and for the anesthetist the administration is greatly simplified.

4. In thyroid work, particularly that type of goitre very often called intrathoracic, or sub-sternal, in which interference with breathing is usually noticeable and quite frequently rather alarming because of pressure and traction upon the trachea. This difficulty is all done away with and there is absolutely no danger of collapse of the trachea.

I dare say, too, that further experience will show that in cases of extreme shock, in cachectic and illy nourished individuals, and also in cases of pulmonary tuberculosis, the intratracheal insufflation of warm ether will be absolutely indicated, for we now know that shock is a rarity in patients anesthetized in this way.

I believe that ether is the safest anesthetic agent to use intratracheally, for the dose of chloroform is so extremely variable. Chloroform and nitrous oxid and oxygen have, however, been used by some anesthetists with a noticeable degree of success. But ether has been found extremely satisfactory;

the patients are completely relaxed and quiet, the breathing scarcely noticeable and very superficial. The pressure, however, should never be kept so high that respiratory movement ceases entirely.

It is important that a correct size of catheter be selected, about half the size of the trachea, for then if this is properly introduced, the patient will preserve a healthy, rosy color. If the patient persistently remains cyanotic, I have found that the catheter is not down to the bifurcation, is through into only one bronchus, or is too large. Then, too, if upon introduction the spasmodic attack of coughing—which is quite common for a short interval at the start—persists, it means that the catheter is too close to the bifurcation and withdrawal of a centimeter or two will cause the attack to cease.

The most noticeable features incident to this method are:

1. The complete absence of mucous rattling.

2. The fact that at the end of the anesthesia, pure air can be insufflated, washing out the ether vapor, making it an ordinary occurrence for the patient to wake up and talk while still in the operating room.

3. The practically complete absence of post-operative vomiting, probably due to the facts that no ether vapor is swallowed and that the patient is never too deeply under the anesthetic. Gwathney states on this point that in an experience of over five hundred anesthetics by this method dilatation of the pupils as an evidence of too deep an anesthesia has never been noted.

An absolutely free air way for the continuous escape of the vapor and air from the larynx and mouth does away with the danger of aspiration.

In the technique which I follow the patient is first thoroughly anesthetised in the usual way. I consider it a very important point to have the patient well under the anesthetic, so that during the application of the gag, laryngoscope or finger, and introduction of the catheter, all coughing and vomiting will be avoided and the danger of aspiration done away with. The head is then drawn well down over the end of the table and the mouth gag placed. The direct

laryngoscope of Jackson is introduced until the beak of the instrument pulls the epiglottis well forward and the larynx is fully exposed. A catheter is selected which is about one-half the size of the glottis, and is then introduced through the instrument and into the larynx. A rushing in and out of air through the catheter will now be heard. The use of the direct laryngoscope makes this whole procedure simply a matter of two or three minutes' time, but with practice I have found that the introduction of the first and second fingers down to the epiglottis, pulling the epiglottis forward, and then the introduction of the catheter down between the fingers and through into the glottis, is a far more simple and indeed a quicker method than that in which the laryngoscope is used. However, this method requires a great deal of practice before one becomes uniformly successful in its use, and I should therefore recommend for general use the direct laryngoscope. The selection of the catheter is an important point; a soft one should never be used, not only because it is difficult to introduce, but because of the danger of it being compressed in case of laryngeal spasm. A soft tube, too, is easily coughed out. A fairly rigid catheter should be used, and I have found that the ordinary shellacked silk woven catheter is the best. As the average adult length from the incisor teeth to the bifurcation is 31 to 33 centimeters, and as one desires the tube to be about 5 or 6 centimeters above the bifurcation, it is well to put a mark on the catheter about 26 or 27 centimeters from the tip of the catheter so that one can tell how far down to push it. In children, the tube must be proportionately smaller and care exercised as to proper depth, bearing in mind the size and age of the child. A rule to remember here is that it has been found to be generally true that the tip may be just as far below the glottis as the distance from the teeth to the glottis.

In summing up my remarks, I conclude that aside from its use in intrathoracic surgery, intratracheal insufflation anesthesia possesses the following advantages over all other methods, viz:

1. An absolutely free, unobstructed and uninterrupted air-way.
2. Even and uniform administration of the minimum amount of warm ether vapor diffused to all the air space.
3. Because of the escape of the excess air vapor from around the catheter causing a strong upward draught, aspiration of vomitus, mucus, blood or septic material which might cause septic pneumonia is made impossible.
4. The known fact that vomiting is practically always absent in these cases makes the selection of this method the ideal one for a great class of cases.
5. Its practicability in operations about the head and neck, where it is of great advantage to the surgeon to have the anesthetist away from the sterile field.
6. Thorough and complete aeration of the lungs, whether the patient is in lateral or prone position.
7. The extremely light or almost imperceptible movements of respiration make it an ideal anesthetic for abdominal work, particularly in surgery of the upper abdomen.
8. The washing out of ether vapor from the lungs with pure fresh air after the operation, which causes a speedy return to consciousness, is most pleasing to the patient and certainly gratifying to the surgeon and anesthetist.

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TRAUMATIC RUPTURE OF THE PANCREAS: CASE REPORT.*

CHARLES B. DYDE, M. D., GREELEY.

The pancreas as you will recall is located along the posterior abdominal wall, extending from the duodenal loop to the hilum of the spleen. It lies behind the peritoneum of the lesser sac and crosses the spinal column at the level of the first and second lumbar vertebrae. The duct extends through

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

the entire length of the gland and empties into the second portion of the duodenum in close association with the common bile duct.

On account of its location the pancreas is peculiarly free from injury, and it is in fact rarely injured except by traumatisms of a violent and crushing character which at the same time injure other viscera.

Symptoms due to injury of the pancreas are not necessarily serious in character unless accompanied by considerable hemorrhage. If the symptoms are severe it is more than likely that some other organ has been injured. Moynihan says that "an accurate diagnosis of injury to the pancreas has not been made in any published case; the lesion has been discovered post mortem, or an operation has been undertaken upon a diagnosis of rupture of liver spleen or bowel".

The present case is that of J. R., aged 13, who lives with his parents near Kersey, Colo. He was brought into the Greeley hospital May 30, 1915. Ten days earlier, while riding horseback near his home, the horse suddenly reared and fell back on top of him, the epigastrium receiving the full impact of the horn of the saddle. He was carried to his home and Dr. Bower of Kersey summoned.

The doctor found him conscious, with evidence of moderate shock. Vomiting, which occurred more or less during the day, ceased by the following morning, when his pulse was 100, and temperature 99° Fahr. The abdomen was slightly tender, and there was a small amount of blood in the urine. The bowels moved voluntarily that day, and continued thereafter to move regularly. His appetite gradually returned and he appeared to be recovering from the injury nicely. About the fifth or sixth day he began to complain of abdominal pain with increased tenderness. His appetite was not so good and the evening temperature rose to 101°. The abdominal distress gradually increased until the tenth day, when he began to vomit and refused nourishment. He was brought to the hospital on the morning of May 30, ten days after the accident happened.

He was rather a poorly developed boy of 13, anemic, and apparently had lost some weight. He was, however, cheerful and did

not present the aspect of a patient seriously ill. The abdomen was full and tender, the tenderness being most marked in the left hypochondrium. There was distinct fluctuation in the abdomen, with dullness in both flanks. The urine was negative, temperature 99°, pulse 100, and respiration 30.

He was operated upon the same morning. A median incision was made one inch above and three below the umbilicus. The peritoneal cavity was found full of bloody fluid with a number of clots in the pelvis.

Further examination failed to reveal any injury, although about two feet of the small intestine exhibited a slightly congested condition. The abdomen was closed, with pelvic drainage, a tentative diagnosis of "traumatic peritonitis" being made.

Following the operation the patient improved in every way. His distress was relieved; vomiting ceased; appetite returned; and bowels moved regularly. The evening temperature, however, remained elevated about 1°, while the pulse varied from 80 to 100. Drainage was removed in 48 hours.

Five or six days later a fullness was noted in the epigastrium. This gradually increased, with correspondingly disturbed respiration and digestion, until the tenth day following the drainage, when the abdomen was reopened. At this time the general peritoneal cavity was free from fluid, but the lesser sac when opened through the gastro-colic omentum discharged several quarts of clear fluid. Drainage was left in the lesser sac, and the abdomen was closed. Following the previous practice, the drain was removed at the end of 48 hours. This proved unfortunate, as in six days the distension had returned, with evident refilling of the lesser sac. At this time the boy was in considerable distress, lying most comfortably on his left side with head and shoulders elevated. He again refused nourishment. His temperature was now 101.6° and pulse 126, both the highest thus far recorded.

The final drainage operation was done on June 15, sixteen days after his entry and six days following drainage of the lesser sac. A new incision was made above the umbilicus through the left rectus, and over the greatest prominence of the tumor. The

stomach was found displaced downwards and crowded against the anterior abdominal wall. The gastro-hepatic omentum, which presented in the wound when the peritoneum was opened, was greatly thickened. An opening into the lesser sac being made through this omentum, the fluid content, again blood-tinged, was discharged to the amount of several quarts. The interior of the lesser sac was highly congested, but no gross lesion of the pancreas nor bleeding point was discovered. Fat necrosis was not noted although looked for. Rubber drainage was carried down to the pancreas and sutured through the omentum in situ.

Following this procedure the patient made continuous favorable progress. Drainage was so free that the dressings had to be changed every three or four hours. A clear and somewhat viscid fluid could be seen oozing out of the wound, excoriating the skin so that it had to be protected with zinc ointment. Occasionally the dressings seemed to be tinged with bile. At this time a small bottle of the discharge was forwarded to Dr. J. N. Hall, who was coming up to see the boy. On examination Dr. T. R. Love reported that the fluid was alkaline in reaction; that the test for bile was positive; that it curdled and digested milk, and that no pepsin was present; the conclusion being that the sample submitted was pancreatic fluid. The patient continued to improve, the discharge gradually decreasing in amount, so that he was dismissed, with the wound healed on July 4, thirty-five days from the time he had entered the hospital, and forty-five from the date of injury.

The history of the case and the character of the discharge would seem to leave no doubt that the pancreas had been injured where the gland crosses the spinal column, the duct being wholly or partially severed. Primary injury to the pancreas was possibly followed by sloughing, which later exposed the duct. This might explain the freedom of the lesser sac from fluid during the first two weeks following the injury. Otherwise we should have to consider the possibility of patency of the foramen of Winslow. If the fluid passed from the lesser

sac into the greater during the first two weeks following the injury, the foramen evidently thereafter became occluded, as from this time on fluid collected in the lesser cavity only.

The pancreatic fluid created within the lesser sac that form of aseptic peritonitis which it is credited with being able to cause, the characteristics of which were congestion and thickening. By this means the foramen of Winslow might have been closed. The general cavity of the peritoneum, however, at the time of the first drainage, when it was distended with bloody fluid, did not exhibit those signs of aseptic peritonitis which were later noted within the lesser sac. This would lead one to infer that the fluid within the greater cavity was possibly a traumatic exudate, and the absence of fat necrosis in the great omentum might further substantiate this theory.

The mildness of the systemic disturbance, due firstly to hemorrhage and shock, secondly to nutritional disorder emphasizing the anemia, and thirdly to the effects of pressure of the intra-abdominal fluid, would seem to agree with Moynihan's statement, that after the initial shock the symptoms depend more on concomitant injuries to other viscera than on injury to the gland itself.

I am pleased at this time to extend my thanks to Doctors C. S. Elder and J. N. Hall for valuable suggestions and help in the conduct of the case.

News Notes

Dr. C. G. Hickey has been re-elected chairman of the City Federation for the coming year. Dr. M. E. V. Fraser will be chairman of the Federation's Committee on Hygiene and Public Health.

The Sociological Conference organized by the University of Colorado, and which has previously been held at Boulder, is conducted this year in Denver. At a special session of the conference on June 15th President Livingston Farrand of the University of Colorado talks on "The Control of Tuberculosis", and Dr. M. E. V. Fraser on "Feeble-mindedness Legislation".

Dr. W. D. Adams of Grand Junction, Colo., has left to reside permanently at Richards, Mo.

Dr. Chas. N. Meader of Denver has been elected dean of the Medical School of the University of Colorado, succeeding Dr. W. P. Harlow, who resigned about a year ago. Dr. Meader will assume his new duties next September. Dr. Meader has been rendering very able service to the college in the capacity of secretary of the Denver section.

Dr. E. W. Elliott, formerly of Fort Morgan, died on May 31st at his home in Turlock, Calif.

Dr. Ranulph Hudston recently had the thrilling experience of jumping on to his own running board and fighting one of two men who were riding in his stolen automobile. During the struggle the car collided slightly with another car, the incident having occurred in the heart of the business district of Denver.

Dr. R. W. Morrish, University of Colorado, 1914, has opened offices at Fort Collins.

Dr. F. A. Blesse has located at Penrose. Dr. Blesse was recently at La Junta.

Dr. Geo. L. Hoel of Fort Collins died on May 22nd as the result of an automobile accident. Dr. Hoel was pinned under his own car, which skidded when turning a corner. He was 54 years old. Born in Ohio, he graduated in medicine from the Barnes College of St. Louis, and practiced at West Liberty, Mo., where he was married. He came to Fort Collins in 1900.

Dr. James Stenhouse died of pneumonia at St. Joseph's Hospital, Denver, on May 24th. Dr. Stenhouse, who was 56 years old, was a graduate of the medical department of Denver University. Three years ago he was appointed chief physician of the Woodmen of the World.

Dr. Norman K. Morris, who practiced medicine in Denver for forty years, died at his home, 1626 Washington St., Denver, on May 12th, aged 64 years.

Dr. Pierre V. Roudiez, 83 years old, a graduate of Cumberland University, Lebanon, Tenn., died at his home in Denver on May 13th. Dr. Roudiez was born in Paris, France, but came to America while still young, and was an army surgeon in the Civil War. He practiced until 1911 in Topeka, Kans.

Dr. J. C. McFadden of Loveland has gone east on a visit to his mother at Cleveland, Ohio, and to the meeting of the A. M. A.

Dr. E. F. Peterson has located at Montrose. He will still spend some part of each week at Ridgway.

Dr. W. K. Hotchkiss of Brighton, in the absence of his wife on an eastern trip, recently entertained several local physicians at a bachelor's dinner, at which it is related that Dr. Hotchkiss was responsible for most of the cooking.

Apropos of the libel action recently brought by an eastern patent medicine house against the American Medical Association, the Colorado Springs Telegraph reprints the veracious testimonial contained in Matthews' "Humors of a County Fair", as follows: "Sir, by the bursting of a powder mill, I was blown into 10,000 anatomies. The first bottle of your incomparable medicine collected all the parts together—the second restored life and animation—before a third was finished, I was in my usual state of health."

Dr. J. B. Twitchell of Portland, Ore., has been appointed chief physician of the Woodmen of the World, to succeed the late Dr. James Stenhouse. Dr. Twitchell and his family will make their residence in Denver.

Dr. Geo. L. Hoel, recently killed in an automobile accident at Fort Collins, carried in various forms insurance estimated at a total of about \$84,000.

The National Association for the Study and Prevention of Tuberculosis (105 E. 22nd St., New York City) has just put out for the use of workers in the anti-tuberculosis campaign a small book or pamphlet entitled "What You Should

Know About Tuberculosis: Useful Facts for the Tuberculous and Those Living With Them". The association quotes a price of \$15.00 per thousand for 5,000 or less, and \$12.00 per thousand for more than 5,000.

The Second Annual Meeting of the Interstate Association of Anesthetists will be held at the Hotel Seelbach (Red Room), Louisville, Ky., July 26 and 27, in conjunction with the National Dental Association.

A general awakening of interest in the cancer problem is attested by the publication by the Central Midwives Board of England of a circular on Cancer of the Breast.

Dr. Samuel Adams, of the National Home for Disabled Volunteer Soldiers, wishes to get into communication with the Denver surgeon who wired an aneurysm of the aorta for E. A. Bouchard, a patient who has just died in the home. The operation was said to have taken place in January, 1916, and the post-mortem findings were of special interest.

Dr. B. W. Reed has removed from Greeley to Saguache.

A leading publishing house writes to warn the profession against a swindler who has been fraudulently soliciting orders and collecting money for subscriptions to medical journals and for medical books published by various firms. He usually represents himself as a student, uses various names, including Grant, Peters, Douglas and Schneider, and usually gives a receipt bearing the heading of some society. He is a young man of Jewish type, rather slender, with very dark hair combed straight back, and shows his teeth plainly when talking.

Dr. Phillip Hillkowitz was called east suddenly on May 14th by the death of his brother, a physician in active practice in Cincinnati. The remains were brought to Denver for burial.

Dr. J. W. Ames and family are away on a month's trip to the A. M. A. meeting and the home of Dr. Ames's parents in Michigan.

Dr. W. A. Sedwick has gone away for a month or two. After attending the A. M. A., he will visit various eastern clinics.

Dr. R. L. Charles attended the convention of the American Association of Anesthetists and the A. M. A., and has gone on for a visit to several eastern cities.

Dr. J. M. Shapiro has been appointed attending physician to the employees of the Ford Motor Co., Denver.

Dr. A. J. Lanza, U. S. P. H. Service, writes that he is getting nicely started in his work at Butte, Mont.

With a view to reorganizing the National Guard of Colorado along such lines as may appear to serve for the best interests of the service, all the officers of the several staff departments have been requested to forward their resignations.

Dr. A. C. Craig is building a new ten-room home at Ninth Avenue and Pearl Street, Denver.

Dr. G. N. Anderson of Denver has removed to Lamar, where he will work in partnership with Dr. N. M. Burnett.

Dr. R. W. Corwin, Chief Surgeon of the Colorado Fuel and Iron Company, left early in May for a tour of inspection of the hospitals in France and other European countries.

Dr. Victor A. Bles, forty-four years old, a former resident of Denver, but for some time located at Elgin, Ill., died on May 9th, at St. Luke's Hospital, Denver, of tuberculosis. Dr. Bles was a native of The Hague, Holland. After serving a year in the Canadian Mounted Police, he came

to Colorado and studied medicine at the University of Colorado, graduating in 1895.

Dr. Martin E. Miles and his wife, both graduates of the University of Colorado Medical School, and formerly in practice in Boulder, are returning to that city from Texas.

Dr. W. H. Sharpley, late Denver Commissioner of Public Welfare, has been placed by Mayor Speer at the head of the new Health and Charity Bureau.

Dr. F. N. Cochems of Salida recently filed a suit with the State Utilities Commission complaining that the Denver and Rio Grande Railroad has been issuing free transportation to seventy-two physicians who have been given only nominal salaries and have received the remainder of payment for their services to the company in the form of free transportation.

Dr. J. R. Gaines, Las Animas, who was recently operated on at Rochester by the Mayos, is passing through a normal convalescence.

Dr. Ralph Mendelson, La Junta, formerly Lieut., U. S. Navy, and afterward a member of the first expedition sent to Servia by the Rockefeller Foundation, has been appointed Superintendent of Hygiene for the Kingdom of Siam and sailed about June 1st for his station at Bangkok.

Dr. F. W. Maier, Rocky Ford, has been carrying his right arm in a sling as the result of an acromio-clavicular dislocation, due to too great enthusiasm at a baseball game.

Dr. F. A. Blesse, formerly of La Junta, has located at Penrose.

Drs. Hardy and Hagerman of Las Animas attended the meeting of the Otero County Society at La Junta on May 9th.

Dr. M. R. Fox has returned from a six weeks' post graduate course in New York City.

Dr. N. Eugenia Barney is doing post-graduate work in New York City, and will also attend the Federation of Women's Clubs in Washington, D. C.

Dr. J. K. Dawson is the proud father of a new boy, who some day no doubt will be able to assist the doctor in his practice.

Dr. W. J. Bingham delivered the memorial address at Brush on May 30th.

Medical Societies

BOULDER COUNTY.

The Boulder County Medical Society met in regular session at the Alps (South Boulder Cañon) on June 1, 1916. A bountiful supper was served at 6:30 p. m., twenty members and guests being present.

The society was honored by the presence of Drs. J. N. Hall, C. B. Ingraham, Wiley Jones, and Oliver J. Lyons. Dr. Hall gave a very interesting and instructive paper on "Pulmonary Complications of Abdominal Suppurations". The subject was handled most exhaustively—instances being reported of personal experience with almost every known type of complication from this source. An especially strong plea was made for the recognition of proper surgical treatment of these conditions before the extensive suppuration, which occasions the pulmonary complication, has taken place.

An enthusiastic discussion followed. The rest of the evening was given up to reports and dis-

cussion of clinical cases and to the relation of anecdotes, etc., of which Dr. Hall was voted the master.

C. L. LA RUE,
Reporter.

EL PASO COUNTY.

The regular monthly meeting of the El Paso County Medical Society was held at the Library on May 10, 1916. Dinner was served before the business meeting. There were 44 members and one visitor present, with the president, Dr. Boyd, presiding.

The applications of Drs. A. F. Swan, C. B. Richmond, A. E. Smith and T. R. Knowles were reported upon favorably by the executive committee.

The application of Dr. Downing for membership in the Society was read and laid over.

The following resolution was adopted:

"Resolved, by the El Paso County Medical Society, That we endorse both the plan and the high character of the extra meetings of this society inaugurated by the president of the society, and that we recommend that they be continued for the rest of this year in the form of entertainment by the entertainment committee of the society;

"Second, That any member of this society may invite one or more guests provided that he pay for all guests that he invites;

"Third, That the extra and regular meetings of this society be not reported to the papers or reporters invited to attend the meetings."

City Health Officer Gillett stated that in the future use would be made of the courts to aid in the reporting of cases of tuberculosis in accordance with the city ordinances.

Program: The Tonsils and Their Relation to Systemic Infection.—Dr. D. A. Vanderhoof.

Discussion: Drs. Mullin, Magruder, James, Crouch, Trossbach, Schofield, Gilbert, Dennis, Robinson, McConnell and Boyd.

GEO. B. GILMORE, Secretary.

NORTHEAST COLORADO.

The Northeast Colorado Medical Society met in regular session in the city hall, Sterling, on May 5th, 1916.

Dr. J. H. Daniels of Iliff read a paper on the diagnosis and symptoms of broncho-pneumonia.

Dr. G. W. Barrett of Crook read a paper on the treatment of broncho-pneumonia.

These papers were discussed by Drs. Chipman, Naugle and Greig.

M. L. BABCOCK,
Reporter.

OTERO COUNTY.

The Otero County Medical Society met in regular session at the Santa Fe Hospital in La Junta on Tuesday, May 9th, at 8:30 p. m., with Dr. F. W. Maier presiding.

The program was given by members of the profession from Pueblo. Dr. J. J. Pattee read a paper on "The Surgery of Mastoiditis," which was very interesting and instructive. Dr. Crum Epler gave a talk upon "The Diagnosis of Abdominal Conditions by the X-ray," which was excellently illustrated by plates. The meeting adjourned at 10:20 p. m.

PUEBLO COUNTY.

President Marmaduke called the Society to order in regular session in the society hall, May 2, 1916.

Dr. Elder presented a paper on Dysmenorrhea. He dwelt especially on etiology, dividing it into two classes, the congenital and the acquired. Of the congenital were the infantile and stenosis classes; of the acquired were displacements, tumors and inflammatory cases.

Dr. Lassen opened the discussion and dwelt somewhat on the relation of certain areas of the nasal mucous membrane to dysmenorrhea. He was followed by Drs. Keeney, H. A. Black, Robe, P. Work and Peirce.

It was moved and carried that the Secretary write Dr. H. Work congratulating him on his recent political honors.

A motion to lay this on the table was carried.
J. H. WOODBRIDGE, Secretary.

WELD COUNTY.

The Weld County Medical Society met in the office of Dr. O. F. Broman on the evening of May 18th. The question of want of interest in the society meetings was taken up and freely discussed. The general opinion seemed to be that the attendance would be better and the interest would be greater if the meetings were held regularly every week instead of every two weeks, as had been the custom during the past year. A motion was made and carried that we resume our weekly meetings and that the night be changed from Thursday to Wednesday.

The program was then taken up, consisting of a symposium on herpes by Drs. Broman, Mead and Lehan, the last named giving the eye complications. A report of the original work on herpes done by Dr. Rosenow of the Mayo Foundation was given quite in detail. An enthusiastic discussion followed.

A goodly number of physicians were present, and on adjourning each expressed his determination to help make the society meetings more lively.

ELLA A. MEAD,
Reporter.

On May 24th the Weld County Medical Society met in the office of Dr. W. F. Spaulding, according to the arrangement made by the society on the evening of May 18th. The program for the next meeting was announced, and as there was no further business, we proceeded at once with the papers of the evening, which were: "The Etiology and Pathology of Urticaria", by Dr. Florence Fezer, "The Symptomatology and Treatment", by Dr. Spaulding, and "Urticaria as an Anaphylactic Phenomenon", by Dr. Broman. Each member attempted to bring out something recent in the literature, which produced a lively interest and discussion, followed by some clinical case reports.

ELLA A. MEAD,
Reporter.

On the evening of May 31st the Weld County Medical Society met in the office of Dr. C. B. Dyde. The membership was well represented and an increasing interest in the meetings was apparent.

The topic for the evening was eczema. Practically every member contributed something of interest, and it was decided to continue the subject further at the next meeting. The program

was made more profitable also by the report of a number of interesting clinical cases.

Dr. Thompson reported a fatal case of placenta previa which, though successfully delivered without much greater loss of blood, still continued to bleed in spite of packing until the patient was exsanguinated.

Dr. Spaulding reported being called to an infant which was apparently moribund from some obstruction to the respiration. The doctor put his finger down the child's throat and discovered a large retro-pharyngeal abscess. There was no time to lose, so a knife was thrust into the mass, the child inverted and an enormous amount of pus escaped. Artificial respiration was necessary to get the breathing started again, but the child made a good recovery. The patient had had an attack of tonsillitis about three weeks before.

Dr. Duboff reported an interesting case for diagnosis. A man of about 35 years with apparently good health began having pain with later some puffy swelling in the subclavicular region. There was considerable rise of temperature but low pulse. The condition grew rapidly worse till the temperature reached a height of 105°, where it remained for days. The general appearance of the man was that of sepsis. No history of infection could be obtained. The swelling and pain began to disappear but the patient grew steadily worse. There was some tenderness in one knee. The temperature remained high and followed a septic course till death, which occurred at the end of about four weeks. Just before death the patient passed into other hands, so no autopsy could be obtained. There were at no time any symptoms in the lungs. No evidence of typhoid could be obtained. The doctor was inclined to regard the case as one of septic cellulitis of the chest wall.

ELLA A. MEAD,
Reporter.

Book Reviews

A Handbook of Colloid Chemistry, by Wolfgang Ostwald. First English Edition, Translated from the Third German Edition by Martin H. Fisher, with the assistance of Ralph E. Oesper and Louis Berman. P. Blakiston & Son, Philadelphia. Price \$3.00.

To the average physician the subject of colloid chemistry is at present as remote as Assyrian archeology. Yet it is destined to play very shortly an important rôle in medical practice. Fisher's work in the treatment of nephritis based on the physico-chemical conception of edema has brought home to the practitioner the necessity of a more intimate knowledge of this new science. Heretofore, to gain his information, the student has had to consult the textbooks in German or in scattered periodical literature. A small monograph on the subject was issued in a U. S. Government publication in connection with the chemistry of clays and the flotation process in gold mining. Outside of this publication and another small brochure, both of which were intended for industrial chemists, there were no works available in English. Ostwald's classic textbook will therefore be welcomed by American readers.

The subject matter therein treated presupposes some acquaintance with physical chemistry. The introduction takes up the concepts of homogeneous and heterogeneous liquids, mechanical

suspensions, colloid and true solutions, the Tyndall phenomenon and dialysis. A chapter on elementary colloid analysis considers the subject of suspensoids, emulsoids, chemical properties and mutual precipitation of colloids. The other chapters treat of the properties of colloids in detail and their behavior under changed conditions.

There is a wealth of new technical terms which sound rather strange in their English translation, leading one to the opinion that the translator has been too faithful to the original and missed the Anglo-Saxon spirit in the terminology.

While the book is written from the standpoint of pure science, there are many paragraphs which have an important bearing on some branch of medicine; such as the behavior of albumins, Brownian movement, the catalytic action of ferments, coagulation, the behavior of dyes, physical properties of emulsions, surface tension, colloidal gold and silver solutions, osmotic pressure, etc.

It is to be hoped that the circulation of the book will stimulate research work along these lines in this country. P. H.

The Clinics of John B. Murphy, M.D., at Mercy Hospital, Chicago, Volume V, Number II (April, 1916). Octavo of 176 pages, 32 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Published bi-monthly. Price per year: Paper, \$8.00; cloth, \$12.00.

As in the previous number of the Clinics, Murphy gives considerable space to dissertations on tendon and tendon-sheath pathology and surgery. Tendon-transference for infantile paralysis and congenital equino-varus is described, but it seems as though such operative treatment for a congenital club-foot of only sixteen months is too radical, for the "varus" element in club-foot when treated early in life certainly yields to careful mechanical persuasion; but evidently Murphy condemns without reservation any type of corrective brace.

The "Review on Surgery of Cervical Rib" is very thorough, clear, and valuable. In differential diagnosis, affections to be ruled out include infantile paralysis, progressive muscular atrophy, syringomyelia, and peripheral neuritis.

In "Hemorrhagic Dural Cyst" and "Phlegmon of Spinal Cord", Charles L. Mix gives two very valuable talks on localization of lesions in the brain and spinal cord, and the apparent obscurity of the lesions is very carefully cleared.

R. G. P.

The Medical Clinics of Chicago. Volume I, Number 6 (May, 1916). Octavo of 229 pages, 22 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Published bi-monthly. Price per year, paper, \$8; cloth, \$12.

The leading report in this issue is from the clinic of Dr. Walter W. Hamburger at the Cook County Hospital, on the Allen treatment of diabetes, including specimen diabetic diets. Hamburger raises again the old question whether or not it is advisable in the long run to insist on making a diabetic patient sugar-free—notwithstanding the fact that it has been conclusively proved that diabetics, even of the severest type, may be rendered sugar-free by the Allen method. Tivnen lectures on the relation of the upper respiratory tract to metastatic infections. Other reports include clinics by J. C. Friedman on chronic pain in the right iliac fossa, by C. F. Williamson on Hanot's disease and the relation of the kidney

to tumors within or without it, by Zeisler on mycosis fungoides, by Hamill on traumatic neuritis, by Preble on nephritis due to tonsillitis, by Tite on pleurisy and on pneumonia with tuberculosis, by Mix on hookworm disease, and by Abt on Rachitis.

Reference Handbook of the Medical Sciences. Vol. VI., Lig-Oza, Third Edition, 1916. Edited by Thomas Lathrop Stedman, A.M., M.D. Publishers: Wm. Wood & Co., New York.

This volume of some one thousand pages embraces the entire range of scientific and practical medicine and allied science from the alphabetical boundary of Lig to Oza, and includes articles of one hundred and eleven prominent physicians and surgeons the country over, among them the names of Leonard Ely, Edward Jackson and A. J. Markley. The Handbook is a series of encyclopedic articles in eight volumes, well bound, printed on substantial paper and excellently typed. The illustrations are profuse and good.

Volume Six under consideration is a favorable example of the Handbook volumes, and as an adjunct of a medical library can be recommended as a work worthy of possession for quick, concise reference.

The articles are up to the minute and usually short and readable.

Almost any branch of medicine and surgery can be found alphabetically arranged, giving a good working knowledge of the subject in hand.

As a reference handbook the work is highly recommended.

R. H.

The Art of Anesthesia. By Paluel J. Flagg, M.D., Lecturer in Anesthesia, Fordham University Medical School, Anesthetist to Roosevelt Hospital; Instructor in Anesthesia to Bellevue and Allied Hospitals, Fordham Division; Consulting Anesthetist to St. Joseph's Hospital, Yonkers, N. Y.; formerly Anesthetist to the Woman's Hospital, New York City. Philadelphia and London: J. B. Lippincott Company, 1916. Price, bound in cloth, \$3.50.

This admirable work consists of 333 pages, with 136 splendid illustrations. The author makes the plea for special, skilled anesthetization by medical men and not laymen, stating that "to give an anesthetic is one thing, to practice the art of anesthesia is another".

The volume is an excellent practical treatise on this important branch of surgery and covers the entire subject of anesthetics and analgesics and their administration in an intensely interesting and practical manner. It should be of great value also to the trained nurse, as the author has borne her in mind in several chapters devoted to her needs. The subject is comprehensively covered and the work should be invaluable as a groundwork upon which the student, intern or general practitioner may build up a more scientific knowledge of the art of anesthesia.

K. F. R.

A Manual of Practical Nursing. By Helen Lillian Bridge, B.S., R.N., Assistant Superintendent and Instructor of Nurses, Washington University Training School for Nurses, St. Louis. Published by C. V. Mosby Company, St. Louis, 1916; Cloth, \$1.00 net.

This is a small hand book describing the regular routine work of a nurse in a hospital. It

begins with the admission of a patient and gives instruction in all the practical things which a nurse should do in the different departments of medicine and surgery. The information is given in such a short concise way, that it makes a very handy book for reference for the nurse on duty. It would be a practical book to supplement the text books in other training schools besides the one for which it was prepared. M. R. S.

Honest and Dishonest Statements of Circulation.—On pages 91-96 of the American Medical Directory, for 1916, will be found what is believed to be a complete list of the medical journals and bulletins published in the United States and Canada. The Directory publishers sent out a notice last September, requesting each publisher of a medical journal to state if his journal conformed to the standards of the Council on Pharmacy and Chemistry, and also asked him to furnish a sworn statement of circulation, promising if he complied with these requests, the data would be indicated in the Directory by printing the name of the journal, and the circulation statement in bold black type. There are 257 journals listed; the names of 133, 52 per cent of the total, appear in black face type, showing they conform to ethical standards.

Only 53 give sworn statements of circulation. But of this number, 15 are state bulletins that do not print advertisements, leaving only 38 medical journals, or about 15 per cent of all, which carry advertisements, that will give public, sworn statements of circulations. By actual count, there are 154 medical journals printed in this list, that accept advertisements, and yet will not comply with an invitation to have their sworn circulations printed FREE, in black face type.

The probable reason they do not do so, is, they do not have the circulations they wish people to believe they have; and if their actual circulation figures were known, it would probably be found their advertising rates, while apparently reasonable, when based on claimed circulations, are in fact excessively high. This is one of the reasons why advertisers have so frequently said "Medical journals do not pay". The journals which give truthful circulations, as a rule, do "pay". The journals which misrepresent their circulations succeed thereby in obtaining exorbitant rates for their actual circulations. Such journals as a rule, cannot "pay", and discredit all medical advertising.

But advertisers are awakening to these facts, and the day is not distant when "truth in circulations", as well as "truth in advertising" will be the rule, and not the exception. Advertisers should, and will, demand sworn statements of circulation, not for one issue only, but for several consecutive issues. It will then be, as it is in some quarters now, discreditable to a publisher who solicits business without voluntarily giving the advertiser a sworn statement of his circulation. All the official State Medical Journals give sworn circulations. They are printed on all rate cards, and in the newspaper directories. In fact, of the 38 medical journals in the American Medical Directory which accept advertisements, and furnish sworn statements of circulations, 27 of them, including this publication, are State Medical Journals. Advertisers appreciate the value of these State Journals, because they furnish truthful statements of circulation, and accept only truthful, ethical advertisements.

Poverty and Tuberculosis.—A recent investigation by the United States Public Health Service showed that the tenement house district of Cincinnati yields a tuberculosis morbidity just three times as great as the areas where better housing prevails. The home of the average wage earner was found to be far less sanitary than the average factory and workshop. The great factor underlying the whole problem was seemingly that of economic conditions. One-sixth of all tuberculosis cases came from cheap lodging houses. A further interesting feature of the report relates to the limited resistance to tuberculosis shown by certain racial stocks. Cities with a high percentage of Irish, Scandinavian, German or Negro stock have a corresponding high tuberculosis mortality, while those where the Italian and Jewish elements are proportionally great have a low tuberculosis death rate. It is also interesting to learn that centers having a slow rate of population increase are likewise subject to a high tuberculosis rate as compared with those in which the population is increasing more rapidly. The reason advanced for this is that in places where the population increase is rapid new buildings are erected to take the place of old, unsanitary structures, so that better housing conditions prevail.

Mechanical Appliances in the Compilation of Census Data.—"At the census of 1890 there was introduced the card system of tabulation, which, with modifications and improvements, is still employed. Under this system, by which the population and mortality statistics are tabulated, the various details as to color, age, sex, parentage, occupations, etc., are transferred from the schedule to a card 6½ by 3¼ inches in size, by means of a mechanical punch, the position of the hole on the card indicating the particular fact to be recorded. The cards thus punched are first run through a verification machine which throws out all inconsistencies and also provides a count for subsequent checking purposes; next they are separated into classes or groups by an automatic sorting machine which will take care of 300 cards a minute; then, depending upon requirements, they are run through a machine which counts them at the rate of 500 a minute; and, finally, they are run through an electric tabulating machine, capable of handling from 350 to 400 cards a minute, which not only counts the cards themselves, but records each of the items of information indicated on them."

Dental Hygienists. The State of New York has just enacted a law, similar to ones which have been passed in Massachusetts and Connecticut, providing for the registration and licensing as "dental hygienists" of women students who have undergone a course of study in oral hygiene in a legally incorporated dental dispensary or infirmary. Any licensed dentists, public institution, or school authority may employ such dental hygienists, who may remove lime deposits, accretions, and stains from the exposed surfaces of the teeth, but shall not perform any other operation on the teeth or tissues of the mouth. This action is due to recognition of the great need for increased attention to the condition of the teeth of school children in New York.

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Term Expires, 1916—A. G. Taylor, Grand Junction; J. C. Chipman, Sterling; 1917—Horace G. Wetherill, Denver; A. R. Pollock, Monte Vista. 1918—J. W. Amessee, Denver; E. A. Elder, Pueblo. 1919—J. A. Matlack, Longmont; Edgar Hadley, Telluride. 1920—Will H. Swan, Colorado Springs; H. S. Henderson, Grand Junction.

DELEGATES TO AMERICAN MEDICAL ASS'N.

Term Expires, 1916—H. R. McGraw, Denver; Alternate, F. R. Spencer, Boulder. 1917—L. H. McKinnie, Colorado Springs; Alternate, George A. Moleen, Denver.

COMMITTEES FOR 1915-16.

Scientific Work, H. A. Black, Pueblo; W. A. Jayne, Denver; Crum Epler, Pueblo; W. H. Crisp, Denver.

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Publication, A. J. Markley, Denver, Chairman (1916); L. B. Lockard, Denver (1917); Melville Black, Denver (1918).

Auditing, O. M. Gilbert, Boulder; H. A. Garwood, Denver; E. L. Rupert, Florence.

Necrology, C. A. Ringle, Greeley; J. B. Davis, Denver; H. Goodloe, Canon City.

Medical Education, Frost C. Buchtel (1916); Will H. Swan, Colorado Springs (1917); George H. Cattermole, Boulder (1918).

Health and Public Instruction, R. W. Corwin, Pueblo; W. T. Little, Canon City; H. A. Smith, Delta.

Committee to Cooperate with State Pharmacal Association, C. E. Edson, Denver; J. C. Chipman, Sterling; E. D. Burkhard, Delagua.

Committee of Arrangements for 1916 Meeting, W. W. Crook, W. W. Frank, and J. P. Riddile, Glenwood Springs.

Committee to Revise By-Laws, W. A. Jayne, Denver; L. H. McKinnie, Colorado Springs; H. A. Black, Pueblo.

Workmen's Compensation Acts, H. R. McGraw, Denver; S. D. Van Meter, Denver; D. P. Mayhew, Colorado Springs.

First Aid, Aubrey H. Williams, Denver; F. H. McNaught, Denver; C. B. Lyman, Denver.

Study and Control of Cancer, T. A. Stoddard, Pueblo; J. G. Hughes, Greeley; T. M. Burns, Denver.

Medical Defense, H. G. Wetherill, Denver; M. J. Keeney, Pueblo; Crum Epler, Pueblo.

Constituent Societies and Times of Meeting and Secretaries.

Bent County, first Tuesday of each month; P. A. Leedham, Las Animas.

Boulder County, every Thursday; C. L. La Rue, Boulder.

Crowley County, second Tuesday of each month; E. O. McCleary, Ordway.

Delta County, last Friday of each month; W. Scott Cleland, Delta.

Denver County, first and third Tuesday of each month; H. R. Stilwill, Denver.

El Paso County, second Wednesday of each month; G. B. Gilmore, Colorado City.

Fremont County, fourth Monday of January, March, May, July, September and November; R. C. Adkinson, Florence.

Garfield County, second Thursday of each month; W. W. Frank, Glenwood Springs.

Huerfano County, P. G. Mathews, Walsenburg.

Lake County, first and third Thursday of each month; E. A. Whitmore, Leadville.

Larimer County, first Wednesday of each month; C. C. Taylor, Fort Collins.

Las Animas County, first Friday of each month; A. J. Chisholm, Trinidad.

Mesa County, first Tuesday of each month; R. B. Harrington, Grand Junction.

Montrose County, first Thursday of each month; S. H. Bell, Montrose.

Morgan County, E. E. Evans, Fort Morgan.

Northeast Colorado; N. Eugenia Barney, Sterling.

Otero County, second Tuesday of each month; R. S. Johnson, La Junta.

Prowers County, first Tuesday of each quarter, F. Milton Friend, Lamar.

Pueblo County, first and third Tuesday of each month; J. H. Woodbridge, Pueblo.

Routt County; H. C. Dodge, Steamboat Springs.

San Juan County; F. W. E. Henkle, Silverton.

San Luis Valley; L. L. Herriman, Alamosa.

Teller County; Thos. A. McIntyre, Cripple Creek.

Tri-County; C. W. Merrill, Burlington.

Weld County, first Monday of each month; J. W. Lehan, Greeley.

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COLORADO MEDICINE

THE JOURNAL OF THE COLORADO STATE MEDICAL SOCIETY

Office of Publication, Metropolitan Building, Denver, Colorado

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(4)

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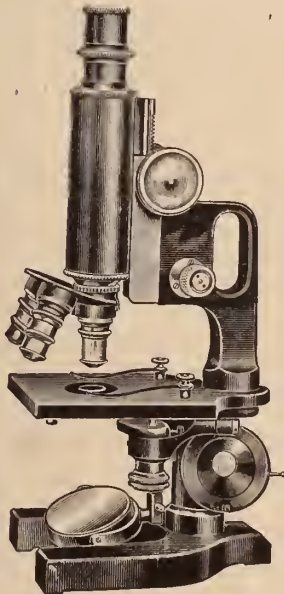
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Colorado Medicine

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No. 7

Editorial Comment

THE 1916 MEETING.

On September 5, 6 and 7, 1916, members of the Colorado State Medical Society will, for the third time in ten years, again assemble at Glenwood Springs to conduct their annual business meeting, to listen to a varied and interesting program of scientific papers, and incidentally to enjoy a good time with their wives and friends among the varied scenic and bathing attractions which this deservedly famous resort has to offer. Some gray heads and bald heads will be seen demonstrating their perennial youth by disporting themselves daily and almost hourly in the big swimming pool. Dr. Crook, Chairman of the Entertainment Committee, is preparing a mystic abundance of entertainments, and has insisted that the Program Committee shall in the main leave each afternoon free for social and recreational enjoyment.

The scientific program, excluding one or two special addresses, is restricted this year to thirty papers. So far as possible, the titles and abstracts of the papers to be read are published in this July issue of Colorado Medicine. Unfortunately, there is quite a large percentage of us in whose disposition procrastination is an essential and unconquerable element; so that, in spite of a vast amount of work and the writing of hundreds of letters by the secretary of the state society, there is still an all too large proportion of those who wish to appear on the program who have so far failed to furnish the required particulars. Surely these writers cannot realize how much their neglect detracts from the completeness of the interest

taken and the effectiveness of the discussion brought out at the meeting.

A number of the members of the society complained in previous years on the ground that they did not receive a definite program of the meeting before arriving at the appointed place. It has therefore been decided this year to make a departure in this respect, by mailing the programs some time in advance, as well as furnishing some additional copies for use at the meeting.

The guests of honor at the Glenwood Springs meeting will include Dr. Livingston Farrand, President of the University of Colorado; Dr. John F. Binnie, of Kansas City, Mo., who will speak on "Congenital Stenosis of the Pylorus"; and Dr. Geo. E. Pfahler, of Philadelphia, who will address the society on "The Treatment of Malignant Diseases by Means of Roentgen Therapy and Electro-coagulation". Two other visitors from outside the state will be Dr. Fenton D. Turek, of New York City, who will read a paper on "The Vascular Role in Intestinal Stasis"; and Dr. Edward A. Skinner, of Kansas City, who will speak on "Roentgen Joint Interpretation".

THE NATIONAL MEDICAL EXAMINATION.

Readers of Colorado Medicine are already familiar with the fact of the existence of the National Board of Medical Examiners, founded a year ago by the late W. L. Rodman, and made up of the three Surgeon Generals and one other representative from each of the Government medical services, three representatives of the Federation of State Examining Boards, and six members chosen at large from the medical profession

by the National Board of Medical Examiners.

The first examination under the auspices of the board will be held in Washington, D. C., beginning October 16th, 1916. The board promises to conduct its examinations on a broad, scientific basis, of such a high and practical standard that the holders of its certificates will receive universal recognition. For graduates of medical schools in 1912 and thereafter, the requirements for admission to examination include a four-year high school course, two years of acceptable college work, graduation from a class, "A" medical school, and one year as intern in an acceptable hospital or laboratory.

The examinations will be conducted primarily by members of the board, and will be written, oral and practical, including the examination of cases. Credentials must be presented to the board sufficiently early for investigation.

The marking will be on a total basis of 1000, the passing grade being an average of 75 per cent, with the failure of candidates who receive a mark below 50 per cent in one subject or below 65 per cent in two subjects. The only fee charged will be \$5.00 for registration.

The subjects allotted the highest values by the board are: "anatomy" 100, "pathology and bacteriology" 100, "medicine" 200, "surgery" 200, "obstetrics and gynecology" 100. Values of 75 each are allotted to "physiology," "chemistry and physics," "materia medica, pharmacology and therapeutics"; while "hygiene and sanitation" and "medical jurisprudence" receive 50 and 25, respectively.

It is possible that for some years the number of graduates presenting themselves as candidates before the board will be somewhat limited, but the examination is likely to become increasingly popular with those who have just completed their scholastic and hospital medical training; especially if, as is expected, in the course of a few years many of the state medical examining boards all over the country shall resolve to accept this national examination as satisfying their own requirements. It is probable that only a small percentage of those who have al-

ready established themselves in practice will feel disposed or able to face an examination the scope of which will involve a thorough renewal of their acquaintance with some preliminary or general studies which have been more or less forgotten and neglected for years past. However, those who feel themselves in this respect to some extent left out in the cold can in no way quarrel with the general object of the national board, but can only sigh to think that such a movement was not on foot before they entered the ranks of the medical profession in the United States.

THE GENERAL EDUCATION BOARD.

Amid the turmoil of war and slaughter on four continents, it is pleasant to turn at times to a narration of some of the more beneficent activities of civilization at peace. When the historical writer who lives in the twenty-first shall sit down to record the history of civilization in the twentieth century, he may assign far less importance in the progress of the nations to the terrific struggle now being waged in Europe than to some other human activities which now scarcely find a place in the daily newspaper.

The children of a later generation may be just as familiar with the names of Carnegie, Rockefeller and Sage as the adults of our own day. The vast accumulations of wealth bequeathed or distributed by such men as these may very well confer greater benefits on human society a century later than in periods more nearly contemporary with the life activities of the donors. In spite of petty jealousy or of broader criticisms of a social fabric which renders possible the amassing of such huge fortunes by individuals, no one can deny that both in the acquisition and the spending of their wealth these men have contributed and will contribute largely and variously to the advancement of the human race.

A compact account of a vast work done in the distribution of private wealth for the public good is contained in the report of the secretary to the General Education Board. The activities of this board are mainly conducted upon the basis of a capital of something more than \$40,000,000 composing what

is known as the Rockefeller Fund; although one who was not previously familiar with this fact would search through the greater part of the volume under mention without finding any indication that such was the case. The general principle of the board's existence is said to be an endeavor "to assist in the further development of well-established institutions, which appear to be necessary factors in a well organized and well-distributed permanent system of higher education". The aid granted to such institutions is by way of permanent endowment, experience having shown that buildings, grounds, or apparatus are usually obtainable from other sources. In view of aspersions which have been cast upon the Rockefeller Fund as being directed toward the selfish control of educational policies, it is interesting to read that "the Board makes no requirements and advocates no particular policy in such matters. Having satisfied itself of the usefulness and high educational ideals of an institution, it leaves its officers and trustees absolutely free in its educational management."

During the past year, out of a total sum of \$1,275,000 appropriated for various colleges and universities throughout the United States, the State of Colorado has benefited to the extent of \$125,000 contributed toward a total sum of \$500,000 raised for the strengthening of Colorado College. In the matter of medical education, Colorado has so far failed to pluck any financial plums from the tree of superabundant wealth. Medical education in general, however, has very materially profited by the benefactions of the General Education Board. The universities of Johns Hopkins, Yale and Washington have somewhat recently received appropriations amounting in all to \$2,750,000 toward the reorganizing of clinical instruction on what is known as the "full-time plan". A review of his personal experience under the new system is contributed by Theodore C. Janeway, Professor of Medicine in the Johns Hopkins University.

Dr. Janeway states the essential aims of the full-time system of clinical instruction as: "The better training of physicians to be fully equipped scientific practitioners of

medicine, especially the better training of the few to be future medical teachers and investigators; and such promotion of investigation in clinical medicine as shall make clinical departments as productive of new knowledge as are the other departments of the University." He believes that it will require not less than ten years to determine the real success or failure of the plan.

He continues as follows: "At the present moment certain definite gains are clear to me. The opportunity for combining a large experience at the bedside with time and facilities for the conduct of research is far greater than in my experience has been possible under any other form of organization. This is particularly true for the head of the department and his more mature assistants, especially the associate professors. These are the men who, under the former system, would have been obliged to devote a considerable amount of their time to the support of their families by some form of practice. The associate professors also get an unusual training in the teaching of clinical medicine, and, I believe, will be the best arguments for the full-time plan when they, in their turn, become heads of clinics." From the standpoint of a professor, there is one disadvantage, in "the temptation to laziness, where work is no longer done under high pressure with the necessity of meeting absolute time engagements". For the student Dr. Janeway sees no disadvantage.

The General Education Board has also particularly directed its energies to a campaign against illiteracy in the South, to the development of secondary education in the same region, and to the improvement of rural education for negroes. The steps taken by this voluntary organization have led to important modifications in existing laws, and to a wide-spread awakening of local energy for the solution of hitherto neglected problems.

MEDICAL JOURNALS AND BOGUS CIRCULATIONS.

The recent issue of the American Medical Directory contains a complete printed list of medical journals in the United States and Canada. In calling for the information con-

tained in this list, the editors of the directory asked the publishers of medical journals: first, to state whether their journal conformed to the standards of the Council on Pharmacy and Chemistry, in which case the title of the publication would be printed in black faced type in the directory; and second, to furnish a sworn statement of circulation, which it was promised would also appear in black faced type.

The statistical results obtained are enlightening. Out of 257 medical journals and bulletins only 133 conform to the standards. 196 of the medical journals and bulletins accept advertisements; 61 do not. Only 55 of the 257 give sworn statements of circulation. Of those that accept advertisements, only 41 give sworn statements of circulation. Only 38 out of the 196 that accept advertisements both conform to the standards and furnish sworn circulations. Of these 38 journals, 28 are the official state medical journals. Another state medical journal, which also conforms to the standards and has a sworn circulation of 1,200 copies, began publication too late to appear in this list. Colorado Medicine is the only general medical journal published in this region which both conforms to the standards of the American Medical Association and has not been afraid to furnish a sworn statement of its circulation.

We wonder how long advertisers of reliable preparations will be willing to spend their good money for the questionable results which are to be derived from appearing in bad company in the columns of medical journals with spurious circulations.

At the opening session of the meeting of The National Association for the Study and Prevention of Tuberculosis, in Washington, D. C., on May 11th, the president of the association announced a gift of \$100,000 from the Metropolitan Life Insurance Company, for the purpose of demonstrating by a community experiment for three years that tuberculosis can be controlled just as any other infectious disease if right methods and adequate resources are available. It is planned to select a town or city of about 5,000 inhabitants, probably in New York or Massachusetts, and to apply there all the knowledge on the treatment and prevention of tuberculosis available, with a view to the ultimate eradication of the disease.

ABSTRACTS OF PAPERS.

To be read at Forty-sixth Annual Meeting of the Colorado State Medical Society, in Glenwood Springs, Colorado, September 5th, 6th, and 7th, 1916.

NOTE.—The abstracts given below are those which are available at the time of going to press with the July number of Colorado Medicine. Further titles and abstracts will be published in August. The titles and abstracts here given are arranged in alphabetical order of the authors names.

CHRONIC APPENDICITIS AND ITS GASTRIC RELATIONS.

H. A. Black, M.D., Pueblo.

Embryologic relationship of the stomach and appendix. Reflex effects of irritation of the colon and disease of the appendix upon the stomach. Pathologic link between chronic appendicitis and certain chronic gastric disorders. Clinical symptoms and their significance. Laboratory and X-ray findings. Conclusions: Chronic appendicular disease may perfectly simulate and at times actually cause pathologic conditions of the stomach and duodenum.

THE PRESENT STATUS OF DEEP ROENTGEN THERAPY, ALSO THE RELIABILITY OF THE ROENTGEN RAY IN THE DIAGNOSIS OF OBSCURE LESIONS OF THE BODY.

S. B. Childs, M.D., Denver.

Reports from the findings of prominent X-ray workers throughout the country will be given on both the deep therapy and the diagnostic work; and an average estimate from the combined reports, that will be an accurate analysis of the status of Roentgen ray therapy and diagnosis at the present time, will be made.

SOME OF THE FREQUENT COMPLICATIONS FOLLOWING ACUTE APPENDICITIS.

F. N. Cochems, M.D., Salida, Colo.

One common complication to which reference is made is the accumulation of fluid in the pelvis, frequently overlooked, and the proper treatment. Some points in the treatment of intestinal obstruction accompanying peritonitis often associated with these cases. For the relief of the intestinal obstruction, early enterostomy is recommended in selected cases and the usually difficult problem of

maintaining nourishment of these patients may be solved by a special method of feeding.

BOTULISM.

Geo. H. Curfman, M.D., Salida, Colo.

The rare occurrence of this form of poisoning in the United States. Complete clinical history of the cases in question will probably aid the profession to more readily arrive at a diagnosis. Report covers seven cases; five succumbed; clinical symptoms noted were referable to the involvement of the cranial nerves, together with typical secretory changes but little or no gastro-intestinal disturbance. Discussion with special reference to life history of the bacillus botulinus and its effects on man.

INTRAVENOUS MEDICATION.

M. R. Fox, M.D., Sterling, Colo.

1, History. 2, Drugs used. 3, When indicated. 4, Technique.

SPONTANEOUS PNEUMOTHORAX IN THE TUBERCULOUS.

Chas. O. Giese, M.D., Colorado Springs.

Frequency. Etiology and Pathological Anatomy. Diagnosis. Suggestions regarding treatment.

DIAGNOSIS OF MENSTRUAL REFLUX THROUGH THE TUBES.

J. N. Hall, M.D., Denver, Colo.

A rare condition, and generally diagnosed only when accidentally discovered at operation. Occurs in young girls, with some form of obstruction at or distal to internal os. Symptoms resemble in mild degree those of ruptured tubal pregnancy. Brief report of two cases—one proved at autopsy, one diagnosed and saved by operation, and of a third suspected case.

TUMORS OF THE BREAST.

Philip Hillkowitz, M.D., Denver, Colo.

Pathology and histologic description of most common benign and malignant tumors of the breast (illustrated by slides). Study of naked eye appearance of various breast tumors as aid to diagnosis. Cystic chronic mastitis, its relation to cancer. Neglect to

recognize early cancer of the breast. The opposite tendency to unnecessary amputation and radical operation. Necessity of diagnosis at time of operation.

CAESARIAN SECTION.

L. H. McKinnie, M.D., Colorado Springs.

As operation of choice. As operation of necessity. Choice in eclampsia, tuberculous women, placenta previa, small pelvis. Twenty-eight cases.

THE FAUCIAL TONSIL AND ITS RELATION TO SYSTEMIC CONDITIONS.

Alex. C. Magruder, M.D., Colorado Springs.

The normal tonsil and its function. The tonsil in arthritis, chorea, goiter, nephritis, peptic ulcer, multiple neuritis, hypertension, appendicitis, tuberculosis, toxic headaches, recurrent tonsillitis, sterility, anemia. The tonsil after thyroidectomy, review of Rose-now's work, operative procedures, Sluder, Beck-Sluder: dissection. Lymphatic tissue development following enucleation.

THE FRACTIONAL DETERMINATION OF GASTRIC CONTENTS.

Julius L. Mortimer, M. D., Denver.

1. Entire cycle of gastric digestion can be studied, recording secretory and motor activity. 2. Curve records entire course of digestion. 3. Character as to amount of secretion. 4. No specific curve for normal person. Three types depending on rapidity of reaction to stimulus. 5. Types termed hyper-hypo- and isosecretion. 6. Continued secretion may be found in normal person. 7. Period of ascension. 8. Character of high point or acme accelerated, retracted, abrupt, sustained. 9. Period of descent or decline. 10. Character and modifications of food residues.

REPORT OF CASES OF DISORDER OF THE PITUITARY GLAND, OCCURRING IN THE PRE-ADOLESCENT PERIOD.

Geo. A. Moleen, M.D., Denver, Colo.

Brief reference to the development of the study and recognition of the effects of disorders of secretion of the hypophysis. Clinical notes of a case of pituitary insufficiency with under development, without adiposity, conforming to the type of Lorain; sexual in-

fantilism and persistence of cartilaginous epiphyseal junctions, illustrated by photographs and roentgenograms. The second case of pituitary insufficiency with sexual precocity and development; pronounced adiposity, conforming to the type of Froehlich. The third case of probable incipient hyperpituitarism and a brief reference to a case of moderate acromegaly in an adult by way of contrast.

THE STRAIGHTENING OF CROSS-EYE BY GLASSES.

Jas. J. Pattee, Pueblo.

The need of informing the laity about the possibility of cure by glasses in children. Importance of treatment as soon as detected. Relation between hyperopia and strabismus. Associated action of convergence and accommodation. Amblyopia and its prevention. Age limit. The results obtained with glasses.

THE NATURE AND TREATMENT OF SCIATICA.

Cyrus L. Pershing, M.D., Denver.

Usually a neuritis. May be of neuralgic nature. May be hysterical. Causes: pressure from spinal disease or pelvic tumors; rheumatic and gouty conditions. Anatomic relations of lumbar and sacral plexus to the sacrum and os innominatum. Treatment: of bone disease; removal of tumors; fixation of sacro-iliac joint; treatment of gout, rheumatism or other systemic conditions; counter irritation; injection of nerve sheath.

SURGICAL TUBERCULOSIS OF THE PERI- TONEAL CAVITY.

Oscar M. Shere, M.D., Denver, Colo.

The reason for the above nomenclature. Need of determining the original focus whence the process is disseminated. Study of the pathology. Empiric versus rational surgical treatment. Illustrative cases. Conclusions.

TUBERCULIN.

Saling Simon, M.D., Denver, Colo.

Tuberculin's rise and fall in popularity was due largely to its improper dosage and

also to the lack of persistency in its use. The moderate dose is probably the prevalent method in which it is employed. Most of the numerous preparations of tuberculin are simply modifications of Koch's three original preparations and offer no special advantage over these. Koch's preparations are either lacking in some of the antigenic properties of the tubercle bacillus, or contain them in poorly assimilable form. Much's preparation is made by first unlocking the tubercle bacillus, discarding all toxic principles and employing only the true antigens of the bacillary bodies. Much's partial antigens are administered under the guidance of the complement fixation and intracutaneous skin tests. The latter is the simpler and most satisfactory method.

Report of cases and results obtained in the use of Much's tuberculin.

ROENTGEN JOINT INTERPRETATION.

Edward H. Skinner, M.D., Kansas City, Mo.

A method of mathematical calculation of prognosis from Roentgen negatives made after reduction. Especially applicable in the common fractures at the wrist and ankle. The importance of functional rather than anatomic reduction of fractures.

INFECTIONS OF THE SEMINAL VESICLES.

William M. Spitzer, M.D., Denver, Colo.

The etiology and frequency of this condition. What is its import? Symptoms, effects and results of this condition. Inability and inefficiency of the urologist in this field the worst stain on his escutcheon today. What he has accomplished and what yet remains to be done in these cases. Relation of recurrent epididymitis and gonorrheal arthritis to infection of the vesicles. Acute seminal vesiculitis. Chronic seminal vesiculitis. Treatment of today.

FASTING.

C. D. Spivak, M.D., Denver, Colo.

Fasting and hunger; fasting as a religious rite; physiology and pathology of hunger; fasting as a therapeutic measure; fasting in diseases of metabolism and digestion; fasting in acute and chronic diseases.

**NEW GROWTHS AND INFECTIONS ASSO-
CIATED WITH AND FOLLOWING CHRONIC
SUPPURATIVE APPENDICITIS. RE-
PORT OF THREE CASES.**

C. E. Tennant, M.D., Denver.

Types of infection of the appendix other than pyogenic, and new growths, are extremely rare. Author's search of literature failed to disclose a reference to the so-called granulomatous infections of the appendix. Recognized pathological sequence of new growths from chronic irritation presumably applies to neoplasm of the appendix. Recent statistics are given which indicate that approximately five per cent of all cases of appendicitis already have cancer growths when operated on. Malignant recurrence does not, however, necessarily follow cancer of the appendix, being of a rather benign nature. Sarcoma of the appendix is almost unheard of.

Of non-pyogenic infections in the appendix, perhaps the most frequent, although rare, are actinomyces and tuberculosis. Primary tuberculosis of the appendix rare, and more common in men between the ages of twenty and forty years.

Case 1—Recurrent appendicitis; gangrenous appendix; a particularly malignant growth developed at the site of the operation and in the incision within a short time after the operation. Fatal termination.

Case 2—Man of twenty-eight years; diagnosis acute appendicitis. Tuberculous appendix and contiguous portions of bowel excised. Active recurrence within six weeks; fatal termination after three years.

Case 3—Young married woman; semi-invalidism interpreted by others as chronic appendicitis. Miscarriage at six and one-half months precipitated an acute abdominal storm. Operation revealed chronic appendix surrounded by new-growth honeycombed with pus pockets. Death after nine months.

The first and last cases suggest either cancer or infectious granuloma.

**THE EFFECT OF INTESTINAL STASIS ON
THE EYE, ESPECIALLY IN IRITIS.**

H. M. Thompson, M.D., Pueblo, Colo.

The profession as a majority are faddists to a marked degree in things medical where empiricism is in control. Adami will have it

all sub-infection and Lane all toxic. That chronic iritis with subacute exacerbations (Elschnig's second variety of uveal tract disease, namely recurrent iritis) has its origin in chronic intestinal stasis, seems to have been proven beyond doubt, not so much by observation in the laboratory as by results in a sufficiently great number of selected cases. To a number of excellent examples of absolute cure by remedying the intestinal disorder by operative means, reported before the State Society in October, 1913, another case will be added of greater interest than any of the preceding ones.

DYSMENORRHEA.

L. G. Weldon, M.D., Denver.

What the lack of diagnosis is leading to. Irregularity of all causes; (a) what it means; (b) what it should teach. Proof of error in diagnosis by treatment should change diagnosis.

CYSTOSCOPY IN THE INSANE.

Philip Work, M.D., Pueblo, Colo.

A preliminary report. Many insane suffer from unrecognized urinary disorders; many are amenable to treatment. Diagnostic value of cystoscopic examination in cases of organic psychoses. Liability to incidental infection. Mental reactions to cystoscopic procedures.

Original Articles

**DIABETES TREATED BY THE ALLEN
STARVATION METHOD; WITH RE-
PORT OF SEVEN CASES.***

TRACY R. LOVE, M.D., DENVER.

Owing to the elaborate work which has been done in recent years by Dr. F. K. Allen, the treatment of diabetes has been so greatly improved that we should expect all cases to live for many years in comparative health and comfort, instead of indifferently allowing them to drift to an untimely end.

The cases I now report vary from the mildest to the most severe in type, some showing

*Read before the Medical Society of the City and County of Denver, May 16, 1916.

the gratifying results of the so-called Allen treatment, others presenting unusual and interesting features, and indicating a more hopeful outlook for those desperate cases which are usually so quickly fatal.

The principles and details of Dr. Allen's treatment have been too well described to require elaborate attention here, and I merely recall to your minds two points in treatment: first, absolute starvation of the patient until sugar free; second, the gradual development of a diet which is sufficient for the patient's needs without the production of glycosuria. Alkalies and alcohol are used as needed to control and prevent acidosis (which is supposed never to be extreme), and to furnish a moderate number of heat units until a satisfactory diet is secured.

Without further comment I report the following:

Case 1. Male, aged 38. Referred by Dr. J. N. Hall. First seen two years ago, two weeks after the first appearance of symptoms. At that time he was passing over a gallon of urine containing 12 per cent of sugar, and, in addition to the more common symptoms, presented an extreme degree of myopia. This eye condition and the glycosuria gradually cleared up under Von Noorden's method. Eighteen months later sugar reappeared and the patient failed gradually until sugar, acetone and diacetic acid were present in large amounts. At this time (23 months after first appearance of symptoms) the patient was urged to submit to Allen's treatment, but he declined. The writer was called to see the patient three weeks later and found the following conditions: Patient in bed, extremely weak and emaciated, pulse rapid and weak, temperature subnormal, respiration rapid and deep, severe abdominal pain, and tympanites. Delirium was very moderate, but patient was drowsy and very forgetful. Nausea and some vomiting were present. Evidently in beginning coma as the urinalysis indicated, i. e. polyuria with decreased output of sugar, moderate amount of albumin, with many small finely granular casts and large amounts of acetone and diacetic acid.

After clearing out the bowels the patient was given whiskey in moderate amounts, and sodium citrate in lemon-juice, as frequently

as the nausea would permit. Vomiting occasionally recurred.

In twenty-four hours the mind was clearer, nausea had disappeared, respiration was easier, and distress nearly gone. By the end of the third day the patient was out of immediate danger, and only a faint trace of sugar was present in the urine. On the sixth day green vegetables were given and the diet gradually increased. Sugar reappeared on the ninth day. The patient was so weak that it seemed best to continue feeding a few days longer. On the fifteenth, sixteenth and seventeenth days, however, he received nothing but whiskey, coffee and alkalies, and on the eighteenth day he was entirely sugar-free. Green vegetables were again given and the diet carefully increased, but sugar returned in a few days. Carbohydrate tolerance was practically zero in this case, and protein tolerance limited. Occasional fast days and careful regulation of protein intake kept the glycosuria at about 2 per cent. The patient gradually gained strength and some weight, but declined another starvation period and finally died in coma four months later.

The extreme emaciation in this case interfered greatly with the use of starvation periods. Increased tolerance for protein was definitely demonstrated, and more lasting results could have been reasonably expected had the treatment been started sooner.

Case 2. Male, aged 38. Referred by Dr. Hall. Has had diabetes for three years and recently neglected his diet. Urinalysis showed 8 per cent sugar, with a trace of acetone and diacetic acid. Was put to bed and given nothing but whiskey and black coffee. In eighteen hours sugar was reduced to a trace, and in thirty-six hours had entirely disappeared. Kept on whiskey seventy-two hours. No acetone. Green vegetables given. Showed 0.5 per cent sugar. Again starved for twenty-four hours and the sugar disappeared. Diet of green vegetables given again. Lived in a hotel and continued to show a trace of sugar occasionally until called from town on account of business.

This demonstrated the value of starvation treatment and the danger of improper preparation of food. The patient suffered no discomfort from the starvation, in fact felt bet-

ter within eight hours of beginning treatment.

Case 3. Male, aged 67. Referred by Dr. W. B. Craig. Had unusual appetite and polyuria all winter. Came to Denver to have cancer of lower lip removed. Urinalysis showed no albumin, 4 per cent sugar, no acetone. In hospital on whiskey and black coffee. In eighteen hours specimen showed trace of sugar, no acetone, no diacetic acid. In twenty-four hours specimen was negative for sugar; faint trace of acetone appearing. Was given eggnog and green vegetables on third day. Fourth day cancer on lip removed by Dr. W. B. Craig under a local anesthetic. Urine showed no sugar, trace of acetone, no diacetic acid. Following the operation, the diet consisted of eggs, cream, oatmeal, gruel and coffee. The urine remained free from sugar and showed only moderate amounts of acetone and diacetic acid. On the eighth day the sublingual glands were removed under local anesthesia. Both wounds healed promptly and the patient went home on the fourteenth day without glycosuria.

Case 4. Female, aged 44. Referred by Dr. H. R. McGraw. Gives the following unusual history: In June, 1914, had polyuria with great thirst, lasting three weeks. In January, 1915, the same occurred, lasting four weeks, the symptoms disappearing both times without treatment or dieting. Ten months later the same symptoms returned, following an attack of "grippe," and patient grew worse until coming to the office in February, 1916. At that time she was passing seven pints of urine daily, containing 4 per cent sugar, without acetone. Patient was put on restricted diet and in twenty-four hours sugar was reduced to 2 per cent. For the next twenty-four hours the patient was without any food and the urine became free of sugar in that time. A trace of acetone appeared. The patient remained in bed complaining of some pain in the left side of the abdomen, opposite the navel. The appetite was gone and respiration had become slightly exaggerated. This condition persisted, and by noon of the second day (forty-eight hours after beginning the starvation period) general bodily distress was evident, and the pain in the left side was severe enough to require

eocodeine. Nausea was marked and respiratory action much exaggerated. Late in the afternoon vomiting occurred which, it was afterwards learned, was fecal in character. When seen that evening the patient was very drowsy, but complaining bitterly of pain in left side of the abdomen. The bowels had moved on the previous afternoon. Fecal vomiting again occurred. Respiration was rapid and a few râles were heard in the left axillary region of chest. The pulse was quick and a degree of rise of temperature existed. Acute acidosis was evident, but the possibility of a beginning pneumonia or an acute obstruction could not be overlooked. Surgical consultation was called and it was finally decided that the condition was probably all due to the acidosis. The patient was then given 25 gms. of sodium carbonate intravenously, and before this was completed she showed definite signs of improvement. In another eight hours she was taking nourishment by mouth. Twelve hours after the intravenous injection the urine showed 1 per cent sugar, much diacetic acid, and ammonia 1.5 gms. for twenty-four hours. The second day urinalysis showed sugar 1 per cent and ammonia 3.1 gm., and the patient was in excellent condition. The third day, sugar 1 per cent, ammonia 3.75 gms. The fourth day ammonia was reduced to 1.4 gm. Seven days later the patient went without food for twenty-four hours again and was then entirely sugar-free, without any signs of acidosis. She has remained sugar-free ever since, has gained five pounds in weight and is strong enough to do her house work on a fairly liberal diet.

This is the only case which I have seen reported in which acute and dangerous acidosis occurred. The urinalysis was of no value as an aid to the diagnosis of acidosis. The severe abdominal pain was apparently related in some way to trouble with the diaphragm (spasm?) as a result of irritation of the respiratory center. This case and case 1 had abdominal pain, which disappeared as the acidosis was relieved. Attention is called to the delay in the production, in the urine, of ammonia in excess of the normal amount, and the delay in production of the ketone

bodies, all appearing after the symptoms of acidosis were relieved.

Case 5. Male, 27 years old. Referred by Dr. W. M. Wilkinson. At Christmas time, 1915, felt better and weighed more than at any previous time. Early in February, 1916, he began to insist on more food and water. Appetite and thirst increased constantly, while weakness and loss of flesh and strength became intense. When patient came to office his mouth was so dry he could not converse without drinking water. Had candy in his pocket all the time. Urine showed about 6 per cent sugar, with trace of acetone. Put to bed and given whiskey and black coffee, and in eighteen hours showed 1 per cent sugar only, with a trace of diacetic acid. In forty-eight hours urinalysis showed no sugar, a trace of diacetic acid, normal ammonia content. He then partook thrice of boiled vegetables (and without my knowledge, bacon and three eggs). Sugar reappeared in small amount. Twenty-four hours' fasting cleared up the urine, which has remained free of sugar to date.

This patient is now on a fairly liberal diet. He had eye symptoms (pain and blurred vision) when first seen but these quickly disappeared. He was away from work less than two weeks and has gained six pounds. The rapid rise in tolerance was well shown by his experience with the eggs.*

Case 6. Female, aged 74. Referred by Dr. McGraw. Sugar for six years without inconvenience. Usually took small amounts of potato and bread. Operated on for cancer of breast. At that time had faint trace of sugar. Uneventful recovery for first ten days. On tenth day wound broke open in part, with appearance of slough and infection. About three weeks after operation conditions changed suddenly for the worse. Loss of appetite occurred with slight nausea and fever. Wound was not healing and the patient was slightly dazed. Tongue dry and red. A week before there had been 4 per cent sugar; now urinalysis showed 2 per cent, with considerable albumin, many small hyaline and granular casts, a moderate trace of acetone, no diacetic acid, and ammonia

0.144 per cent. Allen's treatment started. Two days later an autogenous vaccine for streptococcus was given. The third day sugar 2 per cent. Not so much diacetic acid, one-half as many casts, one-half as much albumin, ammonia 0.1 per cent. Patient feeling much better. Fourth day, patient feeling better still. Sugar $\frac{1}{2}$ per cent, less diacetic acid, only a trace of albumin, no casts, ammonia 0.127 per cent. At noon cellulitis resembling erysipelas appeared on right arm, extending from shoulder to wrist in six hours. No chill, temperature 99°F. Fifth day, sugar same amount, much diacetic acid, ammonia 0.27 per cent. Many small casts; patient failing rapidly. Intravenous injection of 25 gr. of sodium carbonate given at 6 p. m. without any improvement. Practically comatose. Sixth day urinalysis showed no sugar, no albumin, trace of acetone, and patient died at 12:30 p. m. in coma.

The patient was six days without any food but still showed some sugar. Everything seemed to be progressing favorably until the sudden spread of the cellulitis, which apparently caused acute toxic acidosis and coma.

Case 7. Female, aged 54. Referred by Drs. Freeman and Hall. Has had sugar eleven years. Has eaten sparingly of sugar, bread and potatoes. Has had pains in legs for past eight months. When first seen had gangrene of right foot and ankle with small patch on left foot and finger of left hand. Tongue very dry. Patient restless and in pain at times. Urinalysis showed sugar 30 gms. in 3 litres. No acetone, trace of albumin from pus but no casts. On the first day she was given nothing but whiskey and water, and during the next twenty-four hours passed 1750 c.c. of urine containing 13 gms. sugar, with a trace of acetone. Second day, 1300 c.c. urine, 6.5 gms. sugar, trace of acetone. No thirst, no appetite, but comfortable except pains in legs. Third day, specimen passed (three days and eight hours after starting treatment) was sugar free. Fourth day, green vegetables were declined by patient and her mental condition was not quite so good. Temperature rose to 103°. Soda solution was given by bowel but poorly retained. Mouth exceedingly dry. Soda, whiskey, and water given freely. With Drs.

*On July 1, 1916, this patient is still gaining weight and remains sugar free.

Freeman and Hall, it was decided that the patient was absorbing too much from the gangrenous foot. The urine showed 1 per cent sugar, although patient had taken only one eggnog twelve hours before. The leg was amputated above the knee under gas oxygen anesthesia. Patient took water freely with whiskey and sodium citrate. This was on the fifth starvation day.

Sixth day, patient restless and noisy. Urine showed 1 per cent sugar. Trace of acetone, no diacetic acid.

Seventh day, involuntaries; water and whisky freely; patient in stupor; sugar 1 per cent.

Eighth day, four intravenous injections, 100 gms. sodium carbonate in all, were given during the day, but patient died in coma.

This patient went eight days without any food excepting one eggnog, and continued to excrete sugar every day, even her last. The previous case acted in similar manner. Both showed definite signs of improvement when treatment was started.

It would seem that both were living on their own tissues (whiskey was never given in amounts sufficient to furnish over a few hundred calories), and both were manufacturing sugar out of their protein and fat, apparently without being able to utilize it.

Conclusions: It is not necessary to starve every case of diabetes to render it sugar-free, but this method is the most rapid and safe in all cases, even though marked acidosis should occur.

Starvation seems to put the sugar apparatus in favorable working conditions faster and better than any other method.

The after-treatment is more definite, simpler and far more certain than any heretofore employed.

In the presence of severest complications some help may be expected, for at least temporary improvement was noted in the cases cited.

Impending coma, particularly in early cases and untreated cases, may be postponed indefinitely. The amounts of acetone, diacetic acid and ammonia in the urine, are not a safe guide to the degree of acidosis in the early stages of an acute acidosis, and it is suggested that the beta-oxybutyric acid con-

cerned with its production is so combined with the tissues as not to be liberated until symptoms are sometimes well advanced.

Operative cases of various kinds can, in most instances, be made ready for operation within twenty-four to forty-eight hours, with reasonable likelihood of uneventful recovery.

452 Metropolitan Building.

ROCKY MOUNTAIN SPOTTED OR TICK FEVER.*

A. J. CAMPBELL, M. D., DENVER.

The disease known as Rocky Mountain spotted fever has until recent times scarcely found a place in the text books. It has not hitherto occurred with great frequency, and has only appeared in restricted areas. On account, however, of a rather definite tendency to increase in frequency, and because we are living in the region in which the disease more characteristically develops, it seems desirable that some connected and fairly detailed account should be given as to what is known so far concerning the etiology and the course of this malady. It has been my good fortune to see, with a number of physicians, and in various parts of the Rocky Mountain region, a considerable series of patients suffering from Rocky Mountain spotted or tick fever; and with Drs. Tracy Love and Arthur W. Stahl I have also studied closely the life history of the tick which is now generally accepted as the carrier of the disease.

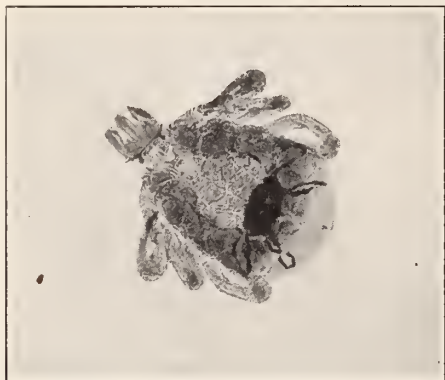
This disease is caused by the bite of a wood tick of the species called "*dermacentor andersoni*" and "*dermacentor modestus*".

These varieties of wood ticks are found in different localities, scattered over all of the northeastern states. The varieties of ticks found in the northwestern states are the wood tick, sage tick, horse tick, pine tick, sheep tick and *dermacentor occidentalis*. The wood tick, sage tick and horse tick are probably identical species, but the sheep tick is of a different species, rarely if ever attaching itself to man. The wood or sage tick is probably the same as the *dermacen-*

* Read before the Medical Society of the City and County of Denver, January 18, 1916.

tor occidentalis. The wood tick, sage tick and sheep tick are found in large numbers in the spotted fever districts.

The disease is of importance on account of its mortality, and of the fact that it is spreading rapidly. In order that you may more easily understand how difficult it is



Showing Immature Wood Tick.

to stamp out, I will describe first the life cycle of the tick.

Ticks belong to the family of "ixodidae", and are not true insecta, but ascerines, and are closely allied to spiders and itch mites. They have eight legs in the adult stage and six legs in the larval stage. Their bodies are unsegmented and may be divided into head, rostrum or capitulum, and body. The body is ovoid, and varies in size, form, color, outline and structure, according to the different species and periods of development. The female is about the same size as the male, when unengorged about five by two and a half millimeters, but differently marked on the back. So far as is known, both the male and female feed by sucking the blood of various mammals, and during the feeding period copulation and fertilization take place. The female continues to feed for three or four days after fertilization, until she becomes tremendously swollen and of a slate color. She then falls off and takes a resting period of about two weeks. Then oviposition begins and the tick shrivels and dies. The female lays from one hundred to several thousand eggs. These hatch in from thirty to fifty days in the summer months, but the process takes much longer if the weather is cold. From the eggs hatch the larvae. These are minute specks, pale

and soft, but finally become covered with a hard brown coating. The larval form has six legs, but no genital or spiracular orifices.

The larvae stick in clumps to blades of grass or twigs, and await passing animals, to which they attach themselves. They become engorged in about five or six days, and increase to about the size of a pin head, becoming light pink or dark brown in color. At this time they drop off and lie dormant for three or four weeks, prior to molting. If they do not secure food for three weeks they die, but if food is obtained the skin is cast and the nymphal form is born. This form has four pairs of legs and spiracular orifices, but no genital aperture. It is slightly yellow in color and about one and five-tenths millimeters in length. It awaits a host, feeds from four to eight days, becoming a brownish black, and enlarges to four by two millimeters. It again drops off, but remains active for about two or three or four weeks, the period being influenced by atmospheric temperature, after which it enters the quiescent stage and lies dormant for about one



Showing Adult Tick Which Has Just Bitten Patient. Note Epithelium in Jaws of Tick.

month, while metamorphosis into the adult form takes place. After molting it emerges from its snowy white shell a mature tick with genital orifices and secondary sexual characteristics typical of the male or female sex, and the cycle is completed. The infected female transmits the infection to the young through the eggs. Experimentally, eastern

ticks have been found capable of transmitting Rocky Mountain spotted fever. It is found that the number of infected ticks in different localities ranges from one in ten to one in one hundred.

About one brood a year is produced. The life cycle of the *dermatocentor andersoni* is about two years. The adult is found almost entirely on the bodies of the large, warm-blooded animals, while the larval and nymphal forms are found on the smaller animals such as ground squirrels, chipmunks, rabbits, etc. This is not always the case, however. The following animals have been found susceptible to the disease: side-striped ground squirrels, ground hog, rock squirrel, yellow and white bellied chipmunks, mountain rat, Columbian ground squirrel, woodchucks, white-footed mice, wood rats, cotton tail rabbits, weasels, horses, hogs, sheep, monkeys, guinea pigs, and also man. Animals have been found in nature with the disease. The virus has not been discovered but will pass through a Berkefeld filter. Its infectiousness is usually destroyed by grinding in a ball mill. The disease is one of spring-time and the early summer months, beginning as early as the middle of March and lasting until the first part of August, corresponding with the appearance of the ticks. It is more prevalent in the foothills and sagebrush regions. It infects individuals whose occupations take them into the sagebrush and mountainous regions, such as stockmen, shepherds, miners, prospectors, lumbermen and others who are exposed to the bite of a tick. It has been seen in children as young as five and in adults as old as seventy years, and is about three times as frequent in males as in females. It has been artificially produced in guinea pigs by inoculating them with the blood of infected animals, and immunity has been established.

The disease varies very much in severity, some cases having a very light attack while others have it so severely that death takes place within a few days. The incubation period is from three to ten days, usually seven, during which time the patient complains of general malaise, chilliness, nausea and slight aching in the back, and all the muscles and bones feel sore. Shortly after

this the patient has a distinct chill and goes to bed complaining of headache, backache and extreme soreness of the muscles. In extreme cases the limbs feel as if in a vice, the tongue is heavily coated, with red edge and tip, and sordes appear on the teeth and gums. The conjunctiva becomes congested and yellow in color; in some cases very red. The urine is small in amount and highly colored; the specific gravity high, with albumen and casts, and occasionally hematuria is present. A great many cases show a marked bronchitis. Nose bleed occurs in practically every case. Alcoholics show a special tendency to pneumonia. The spleen and liver are generally more or less enlarged. Every case has obstinate constipation. The fever is of a continuous type, with slight morning remissions, generally beginning with a temperature of 100 to 101 in the afternoon, gradually increasing over a period of twelve to fourteen days, until the maximum of 104 or 105



Showing Eruption. Fatal Case.

degrees in the afternoon is reached. The fever drops by lysis until at the end of three or four weeks it has reached normal. Occasionally we find that at the end of seven or eight days there is a slight drop in the temperature for twenty-four to thirty-six hours, when it again rises to its maximum height. This is followed by an increase in the rash. Pain in the back and head is marked during the first week of the disease. Patients change position frequently because of the soreness of the muscles and bones. The mind is usually clear even in the severest cases. The eyes react normally but the other reflexes are usually exaggerated. There is delirium sometimes, varying from a mild degree to a maniacal condition. This seems

more common in fleshy people. A semi-comatose condition lasting for several days is rather frequent in the aged.

The pulse is that of an average typhoid, but the pressure is generally lowered. The blood examination shows a progressive decrease in the red cells, with an increase in the whites. Three cases gave the following count:

Polymorphonuclears	80.2
Large mononuclears	10.
Small lymphocytes	9.
Eosinophiles	9.

The Widal test is negative.

A microscopical examination of the blood shows the débris of broken down red cells and iron pigment in the blood. The hemoglobin is always reduced and may go down to 50 per cent. In later stages of the disease, and especially in the aged, cyanosis appears. This is probably due to destruction of the hemoglobin and the resulting deficient aeration.

In some cases plasmocytes closely resembling the plasmodium of the estivo-autumnal type were found and the fact that the fever is markedly affected by quinine makes it seem likely that the disease is closely related to malaria. Death in fatal cases seems to be due to intense intoxication or cardiac dilatation.

On the third, fourth or fifth day a very characteristic eruption appears, usually at first upon the back, ankles and wrists, soon spreading to the limbs and body, and later involving the forehead, eyelids and ears. About the middle of the second week it becomes noticeable in the palms and on the soles of the feet. Several days later the eruption can be seen on the soft palate, the posterior pharyngeal wall, the pillars of the fauces, and, in a number of cases, on the buccal membrane. The temperature is influenced but little by the appearance of the rash. The eruption is at first macular, very fine, of a pinpoint character, gradually becoming blotchy and slightly elevated. In some cases the spots coalesce. They vary from a salmon to a bright red color, and also from a dilatation of the capillaries, venules and arterioles to a very extensive purpurial hemorrhage. They are not confined to the skin and mucous membrane, but also occur

in the adipose tissues and muscles. In mild cases the spots are very pale and widely separated. In these cases the fever seldom rises higher than 102 degrees. The spots at first readily disappear on pressure, and come back to their original color quickly. As the disease progresses they become darker and darker until they are a distinct purple. By the tenth day they fail to disappear on pressure and are petechial in character. Hemorrhage does not appear in all the spots except in the most severe cases. The spots do not all appear at once, but seem to develop in successive crops until the whole body is covered. In from fourteen to twenty-one days they begin to lose their petechial character and disappear slowly on pressure. As the fever subsides the eruption begins to fade. However, a return of fever, free perspiration or exposure to cold weather will bring out these purple spots again. This peculiarity may be noticed for weeks or even months after convalescence. The life of any given crops of spots is about fourteen days. Following resolution there is some destruction of the overlying skin, accompanied by desquamation. In very severe cases when the spots coalesce on the ankles and lower limbs, forming a large hemorrhagic area, the disease may resemble purpura hemorrhagica. If the spots are thickly planted but do not coalesce, the case may resemble a true rheumatic purpura. At times the desquamation is very marked, forming casts of the fingers. In very severe cases, sloughing of the palate, pharynx, ears, penis, and scrotum may occur.

The complications of Rocky Mountain spotted fever do not seem to be uniform or very frequent, but the following have been found: uremia, pharyngitis, myalgia and joint pains, heavy deposits in the urine, nephritis, meningeal involvement as evidenced by delirium stupor etc., endocarditis and myocarditis, cardiac weakness, phlebitis, edema of the lungs and glottis, pneumonia, bronchitis, sloughing or gangrene of pendulous portions of the skin, flatulence, constipation, toxemia, hyperpyrexia, conjunctivitis, retention of the urine, diarrhea, and great muscular weakness.

The most common complications, however, are meningeal irritation, nephritis, pneumonia, bronchitis, cardiac weakness and gan-

grene of the skin. Hyperpyrexia and organic heart disease are next. Myalgia and joint pains are found in practically all cases. The severer types of the disease nearly always develop complications. The mortality differs considerably in different locations. The disease is quite fatal in the aged and alcoholic, and very rarely fatal in children and young adults. Nearly all uncomplicated cases recover. The mortality in the state of Idaho is about 5 per cent, in Colorado about 35 per cent, and in Montana I understand that it ranges between 60 and 70 per cent, especially in the Bitter Root Valley. Death often takes place from cardiac dilatation.

The treatment consists first of prophylaxis, second of the treatment of the disease after it arises. The prophylaxis is accomplished by destroying the tick, its hosts and nesting places. As the tick soon dies if prevented from feeding, all small animals in the infected districts should be killed by feeding them poisoned food or by other means. Cattle, horses, sheep, etc., should be dipped every seven or eight days. People inhabiting tick regions should examine their body and clothing every two hours, as it takes the tick about this length of time to attach itself to the body. Animals from an infected district should not be shipped to other parts of the country until they have been thoroughly cared for and examined by competent men. Cases should be reported to the State Board of Health, so that infected districts may be ascertained. Infected districts should be cleared of all weeds and underbrush, as the tick is soon destroyed if exposed for any great length of time to the hot sunlight. Barns, corrals, etc. should be sprayed with antiseptic solutions after being used. Infected districts should be grazed by large numbers of sheep, for it seems that the long, thick, greasy wool prevents the tick from falling off and inhibits fertilization, and that the lanolin covering the skin of the sheep stops up the breathing spaces on the tick as it attempts to burrow into the skin, thus causing its death. One thousand five hundred sheep were pastured on infected pasture for two or three months, and when they were sheared, 25,000 dead ticks were found.

Each tick bite should be touched with a little pure carbolic acid. The fever seems to yield readily to the injection of five grains of quinine bisulphate, hypodermically, every three or four hours during the day. This cuts short the course of the fever, with a duration of from five to ten days. The toxemia is best treated by giving the patient large quantities of water. If the quinine bisulphate produces a diarrhea we may substitute emetine hydrochloride, one-half grain hypodermically, twice a day until the hemorrhagic tendency seems to have passed. Calcium salts also have a marked effect on the hemorrhage.

Adrenalin chloride, in from 5 to 10 m. doses hypodermically every three or four hours, seems to have the power of checking the hemorrhage.

The diet should be light throughout the disease. The mouth and teeth should receive especial attention. The bowels should be kept well open by using cathartics and high rectal enemas. If the temperature gets very high it may be combated by baths, alcohol sponges and ice packs. The pain is best relieved by the use of aspirin or phenacetin. Should small spots of gangrene appear on the skin, the surface should be bathed with an antiseptic solution.

452 Metropolitan Building.

INFLUENCE OF SYPHILIS UPON SURGERY.*

WILLIAM SENDER, M.D., PUEBLO.

Considering syphilis from the standpoint of modern laboratory methods, surgery complicated by this disease takes on a newer and more sinister aspect.

In approaching any study of syphilis with the aid of the Wassermann and allied reactions, several factors must be constantly borne in mind. Of these the most important is the personal equation of the serologist. Unfortunately, reports are often given by those thoroughly incompetent through lack of training, and the results obtained are worse than useless. Of equally great moment must be our ability to judge the serol-

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ogist's interpretation of his own findings, as we know that even among experts there is an individual variation as to results obtained, and therefore we should be thoroughly familiar with the deductions of our one and only chosen expert.

Again, there is no standardized technique; antigens and amboceptors vary in every laboratory. These factors may mislead the expert unless he performs the reaction with great frequency, with proper controls and with the same fresh reagents.

It is assumed in this paper, however, that all the aforementioned essentials for proper performance and interpretation of a Wassermann reaction are present; also that, such being the case, this reaction when positive to the four plus degree must be assumed to furnish conclusive evidence of syphilis—history and physical findings notwithstanding.

The profession is rapidly appreciating what a frightful scourge syphilis really is. A recent bulletin from the office of the Surgeon General states that recruits who had passed a rigid double physical examination, immediately afterwards demonstrated 16.77 per cent of probable syphilitics by the Wassermann test.

One of the large hospitals in the East reports over 20 per cent of positives among all classes of patients.

We know that infection may occur through a minute abrasion, the ideal inoculation being not deep enough to draw blood but just enough to cause a slight serous oozing.

Although microscopic changes take place a few hours after inoculation of monkeys, we do not recognize the lesion as a chancre for about a month. Again, nine hours after deliberate inoculation of a medical student, the lesion was carefully removed by wide dissection, nevertheless the patient showed typical syphilis later, proving that the increase of spirochetes is tremendous, and their spread through blood and lymph marvelously rapid. Is it any wonder, then, that the primary lesion may readily escape detection and that the patient, believing he is truthful, denies infection?

All this means that when a man's daughter marries the chances are one to five that

she will become a victim of "damaged goods."

And the tragedy of it all is that she does not know the risk she is taking, may never realize she has been infected, and her physician must flounder about trying to learn without exciting suspicion as to whether she has lues. The Wassermann reaction performed under ideal conditions has relieved us of much of this uncertainty. On the other hand, it is a terrible accusation for the serologist to damn an innocent with a positive reaction.

During the last few years we have been accustomed at the Minnequa Hospital to use the Wassermann reaction on all patients remaining more than four days, without regard to disease, injury or occupation. The findings have explained many of our failures and proven or confirmed facts long suspected or known to the profession.

The following series of cases decided us to perform this examination of all patients; but bear in mind that this series represents only cases showing complications not easily explained and in which a Wassermann was made in an attempt to clear the diagnosis.

Total Wassermann tests, 264.

Medical: "3 plus", 27; "4 plus", 13.

Surgical: "3 plus", 21; "4 plus", 20.

Total probable syphilitics 81, or over 30 per cent.

The surgical cases were complicated with non-union of fractures; sluggish appendiceal abscesses; severe stitch abscesses; gall bladder infection associated with cirrhosis of the liver; intestinal strictures suggesting cancer, etc.

In syphilitics demanding operation, as for instance a crushed arm, the wound behaves just as we should expect; a convalescence usually prolonged beyond the normal time, often with a discharging sinus persisting until antisypilitic treatment clears the field.

Why there should be such a peculiar interaction of syphilis and pyogenic bacteria, we do not know. We do know, however, that such a case runs an erratic course; perhaps showing extensive destruction, or ceasing abruptly when hope has almost been abandoned, or with intervals of inactivity followed by an explosion!

Whatever the anticipated outcome of a

pyogenic infection, the presence of a positive Wassermann should immediately lead to vigorous antisyphilitic treatment in an effort to forestall possible disastrous consequences.

My plea, then, in all operations of necessity, is to take a Wassermann as soon as possible and institute treatment at once if indicated.

To illustrate—A young woman, prior to her marriage two years ago, had always been healthy. She gradually failed in health, and consulted one physician after another with the repeated diagnosis of neurasthenia. She suddenly developed an acute suppurative appendicitis. A plus four Wassermann was obtained just before she entered the operating room. Her post-operative convalescence was stormy but we felt that she would have died had we not known and immediately dealt with the syphilitic infection complicating the case.

In operations of choice, such as a hernia, we now feel it just as essential to make a Wassermann test as to examine the urine or chest prior to operation. If syphilis is so prevalent, and its influence in surgical cases often just as pernicious as nephritis, is there any excuse for not trying by every means in our power to detect its presence? Before adopting our present method we have had delayed healing in certain cases denying all history of syphilis. But when confronted with non-union or a sloughing wound, and later with a positive Wassermann, we were made to feel the necessity of adopting our present method.

Routine Wassermann examination of all cases is not the result of a sudden fad, quickly to be dropped, but rather the result of observation of operations, supposedly aseptic, which developed "stitch abscesses" or worse. The test made after their development gradually forced us to believe that a majority of "stitch abscesses" also belong in the category of those cases so long known to the profession as syphilitic complications of surgery. If this be true and if one-fifth of our patients have syphilis, are we as careful as we should be? Would not all of us refuse to plate a bone in the presence of untreated syphilis, knowing how susceptible even under the most favorable conditions the bone is to infection?

Would we not hesitate to repair a perineum or remove a goitre associated with a plus four Wassermann? Does the refined but ignorant woman know she has syphilis, or her guilty husband admit it, and do we always find it through history and physical examination alone?

To illustrate.—A few years ago we operated on a woman of the finest type for uterine fibroid. No one suspected her of syphilis until a gumma developed along the line of incision. Had the Wassermann been taken before instead of after the operation, how much suffering she would have been spared!

There are times when a patient will refuse to take antisyphilitic treatment prior to an elective surgical operation, and seek assistance elsewhere. In such a case, luck may play us false when the individual makes a splendid recovery and jeers at us for our attempted precautions!

Surgical complications of medical cases have also shown the possible influence of syphilis. For instance, three out of four cases of empyema associated with acute lobar pneumonia were syphilitic; two cases of lung abscess complicating pneumonia, and our only typhoid perforation in four years, had positive Wassermann tests. Other cases could be cited, none in sufficient numbers to draw positive conclusions, but enough to make us think of probabilities.

Surgery has but recently realized that syphilis "does not deal in a straightforward manner with tissues but has numerous hidden processes". *Tabes*, aneurysm and paresis pointed out the possibilities to the internist long before the surgeon grasped the situation. We know that long continued syphilis tends to thicken normal tissues, to replace by scar tissue, or to form gummata. The latter may become absorbed or pave the way to suppuration through invasion by pus germs.

Surgery, then, must recognize these factors and differentiate them from other diseases producing similar conditions. Late syphilis prefers bones and joints, muscles and tendons, mucous membranes and the nervous and circulatory systems.

Many have been the operations performed upon syphilitic lesions through error, which

a Wassermann test would frequently have prevented.

It is of course admitted that some syphilitic lesions need operation. But when such operation is performed let it be done with full prior knowledge as to the true cause of the lesion, so that we may be prepared for the future care of the case.

The most common medical troubles to be borne in mind when considering surgery on the syphilitic are those of the heart and vascular system. Cardiac syphilis and syphilitic arteriosclerosis are of much importance in prognosticating the risk in a major operation.

A word as to treatment. As soon as a positive Wassermann is reported and syphilis denied, the patient's history is reviewed and a thorough physical examination is again made with the view of seeing whether any lesion has been overlooked. If in the primary or secondary stage, neosalvarsan and mercury are pushed to the point of tolerance in the hope of effecting a cure. In the tertiary stage we use hypodermics of sodium cacodylate, 3 gr., alternating every other day with mercury salicylate, 1 gr. Such treatment is at once given in practically all syphilitic cases, medical or surgical, regardless of what other disease or accident may have brought them to the hospital.

Objection may be made that the Wassermann is often negative in syphilitics. Because at times a nephritic may show no albumen in the urine, should we abandon our urine tests? The only logical objections to the Wassermann are the difficulties in the making and the lack of experts to perform the same. The profession, however, has a right to demand proper service and it is our own fault if we do not receive it.

In closing, allow me to repeat again that the Wassermann 4 plus means syphilis. The weaker positive reactions always suggest syphilis, sufficiently strongly to make us search for confirmation. Bearing this in mind, let us shorten convalescence, prevent complications, or avoid useless operations by always knowing beforehand, if possible, or immediately afterward, when forced by circumstances, as to whether our operative patient is luetic. The handwriting is on the

wall; the laity are becoming entirely too wise not to appreciate a careful multiple diagnosis of their ills. While we may take the "wiser than thou" attitude, the diagnostic value of the Wassermann test has been proven. The skeptic must fall in line and protect his patient. Should he, through neglect or carelessness, fail in this respect he leaves himself open to just criticism, and before many years he will be considered quite as neglectful as though he operated without examining the urine.

DISCUSSION.

John Lindahl, Denver: I wish to report and present a case in connection with the paper of Dr. Senger. The patient, 52 years of age, worked in a cheese factory. He denies venereal disease, and the history that I elicited was that five years ago he had scratched the middle finger of the right hand on a wire, with resulting inflammation, swelling and pain. The finger was opened by a physician; the condition continued for eighteen months, when the finger was amputated. Two weeks after the operation the entire arm became inflamed; he received treatment at the County Hospital. Drainage tubes were inserted and antiseptic dressings were applied. A diagnosis of infection was made. During the last two years the patient has been coming to the County Hospital as an out-patient, receiving injections of phylacogen for mixed infection. A diagnosis was also made of diffuse gangrene. The patient has lost eighty pounds in the last five years. It proved to be a case of syphilis of some twenty or thirty years standing.

C. B. Van Zant, Denver: I have listened with a good deal of interest to Dr. Senger's paper, and if I remember the statements clearly, it seems to me he over-emphasized the pathognomonic value of the Wassermann test. I gained the impression that he considered its appearance practically always to mean syphilis. There have appeared in the Journal of the American Medical Association within the last six months two articles in which this test has been carefully weighed, one paper by Weisenburg, and another by MacKinney and Uhle, in the September 4th issue. Both of these authorities, after careful investigation, point out that there are great discrepancies in the returns of the Wassermann test which come in to us from various serologists. For instance, in the experiments of Uhle, covering 300 patients, the blood was submitted to five of the most eminent serologists of Philadelphia, men connected with hospitals and medical colleges, and only about 50 per cent. of the returns were in complete accord. In a little over 50 per cent. there was discord as to the returns on the part of one or more serologists. In 20 per cent. of the cases, one man disagreed. In 12 per cent. two men disagreed with the others as to the findings. In 21 per cent. three or more men out of the five disagreed. Worse than this, opposite findings were returned by a serologist on two samples of blood taken from the same individual at one time. In other words, if a specimen of blood from the same individual be submitted to five eminent serologists, there is one chance in two

that the reports will agree—a statement I think well worthy of our careful consideration.

In the other article by Weisenburg, he quotes from a recent work on serology to the effect that syphilis should not be diagnosticated in the laboratory, nor should the laboratory worker consider himself competent to make a positive diagnosis. "The general function of the laboratory worker is not so much to detect a syphilitic, as to protect the non-syphilitic individual from a wrong diagnosis and useless treatment"; and Weisenburg adds that it is time to make clinicians appreciate that the Wassermann reaction is not an infallible test, and that it is the greatest mistake to depend upon its findings alone for a diagnosis. "The clinical symptoms should always be the first and last word in the diagnosis of every syphilitic condition."

I raise this question because it seems to me, when we consider the personal distress and the therapeutic discomforts arising from subjecting a person to such a serious diagnosis as that of syphilis without absolute grounds, we are taking a dangerous position. Some of these discrepancies have been due to a difference in technic, or to differences in the antigens used; and it appears to me that until our serologists adopt some uniform technic and some standardized antigen and agree among themselves upon the details they use, we shall have to accept the findings of the laboratory with some degree of doubt. I say this not in any way to decry the value of the Wassermann test, which I think is one of the greatest aids we have in our clinical work, but to emphasize the fact that before we doom a patient by our diagnosis, we ought to have two or more serologists make frequent examinations of the blood; if need be, of the spinal fluid; or have a luetin or Lange's colloidal gold test made. In other words, we must absolutely satisfy ourselves by every means at our disposal before we make a pronouncement on this matter which is so vitally important to the patient.

William Senger, Pueblo (closing): At the beginning of my paper I tried to emphasize that the Wassermann test, unless made by an expert, is valueless. Unfortunately, the test is made by different men under different conditions, with different reagents, and consequently we cannot, by using several experts, be sure of their findings. We should have one chosen expert, cling to him, and we ourselves make deductions from his reports. For instance, one man may call a Wassermann test plus 4, and another call the same a plus 3. If we have but one expert to make the reactions, we ought soon to judge the reliability of his findings and the significance of the different strengths of reactions. I feel that a plus 4 Wassermann from the hands of a reliable expert is superior to physical findings and to history, because we know that the average syphilitic is prone to lie deliberately or innocently concerning this disease. In my paper I tried to show the unreliability of both syphilitic history and physical findings among recruits of the United States army. If failure is so apparent after the rigid examination for the army, how often are we misled? In other words, we must admit that physical examination does not show syphilis in a great many of our cases. In the work we have been doing, we take a Wassermann of our cases without respect to the disease or injury from which the patient suffers. Is it not more than a coincidence that both surgical and medical cases developing complications should give a positive Was-

sermann in a great majority of cases, while the uncomplicated cases comparatively rarely give such a reaction? If this be true, we should be more careful in trying to ferret out our cases of syphilis. Do not count on a plus 4 Wassermann as being positive proof of syphilis if you will, but if you get such a reaction, go over the patient's history, make another physical examination of the man; and you will be dumbfounded to find evidence of syphilis entirely overlooked before.

INGUINAL HERNIA AND THE COMPENSATION LAW.*

R. W. CORWIN, M.D., PUEBLO.

The compensation laws, among other things, make the study of inguinal hernia important. Inguinal hernia should be more clearly defined, the anatomy thoroughly understood, and the causes known, not only by doctors, but by the laity.

As early as 1543, Vigo defined hernia as "rupture" or "bursting". Some dictionaries still define hernia as a "rupture"; others as "the protrusion of a viscus from the normal position", "protrusion of a loop or knuckle of an organ or tissue through an abnormal opening", or "projecting through some natural or accidental opening in the walls of its natural cavity"; and inguinal hernia as "one into the inguinal canal", or "a hernia occupying the inguinal canal".

These definitions do not make clear the differences between inguinal hernia caused by violence and non-traumatic and potential hernia. Traumatic hernia will not be considered in this paper. Where there is trauma, evidence is direct and difference of opinion rare. It is non-traumatic inguinal hernia that concerns us in relation to the compensation law.

The anatomy of the inguinal region is too familiar for me to take time to review, but reference to some of the causes that have a direct bearing upon inguinal hernia may not be out of place. These include (1) the depressions in the pelvic cavity referred to by most authorities as a cause or excuse for hernia; (2) failure of the tunica vaginalis to close; (3) the "infundibuliform fascia" made by the passage of blood vessels; (4) the natural deformity, weakness and defect that exists in so-called normal pelvic cav-

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ities; (5) the resistance of the normal abdominal wall and the resistance at the internal ring when nature has exerted its best efforts; (6) ptosis of the abdominal viscera; (7) the shape of the abdomen; (8) weakness from old age.

Predisposing causes of inguinal hernia include heredity, age, sex, form of the abdomen, length of the mesentery, and prolapse of the mesentery.

Exciting causes of hernia include occupation (stokers, vendors), pregnancy and parturition, diseases of the lungs, crying in infancy, vomiting, straining during micturition, straining during defecation, tight lacing, ascites, increase of bulk of abdominal viscera, physical culture in old age or by "correspondence", and golf.

Dr. S. C. Plummer, in an article in the *Railway Surgical Journal*, May, 1915, makes the following division of causes of hernia: Under immediate causes: direct violence at the site of the hernia; violence to other parts of the body, but not directly to the site of the hernia; and increased abdominal pressure—strain—not accompanied by external violence.

Under predisposing causes: failure, partial or complete, of closure of the funicular process; large size of the inguinal canal; weakness of the structures forming the walls of the inguinal canal; and lipomata in the inguinal canal.

The writer feels that there are five points for us to consider in connection with this subject. First, what is a hernia?

Moschocowitz gives the following definition: "A hernia is a protrusion of an intra-abdominal viscus into a preformed sac of peritoneum. If this definition is correctly scrutinized, it will be found that the only essential part of a hernia is the sac. I am sure it does not require any lengthy argument to prove my contention, but I may be permitted to prove it by a simple example. An individual in the erect position has a hernia, which is composed of two parts, namely, hernial sac plus hernial contents; he now lies down, and the contents are reduced; he, of course, still has his hernia, although there are no contents within the sac. The same is true of an individual who

retains his hernial contents by a truss. The sac being an essential (*sine qua non*), it is incumbent upon us to carefully analyze the mechanism of the formation of the sac." (*Medical Record*, April 3, 1915.)

What does the laity consider a hernia? Their ideas are indefinite: any enlargement in the inguinal region is usually termed a "rupture".

Is it possible for intestine to be forced through a sound abdominal wall by coughing, sneezing or straining? The writer and others with him have tried repeatedly upon the cadaver to force the finger from within through the sound abdominal wall, but have never met with success. The finger will flex before the wall will yield. What is true of the abdominal wall is true of the perfectly closed internal ring. The finger cannot be made to enter the ring from within unless the ring be defective. According to the imperfection, size of the ring and weakness of the tissues, the finger meets resistance or finds entrance into the canal. If the ring be large, but no sac has yet been formed, our experience is that the finger even then meets with considerable resistance before entering the canal, and often the peritoneum will rupture rather than stretch before the finger. But under no circumstance does the writer feel that the gut or omentum can be coughed, sneezed or strained through an abdominal wall, or forced into a sound or perfectly closed internal inguinal canal.

But what about the potential hernia, where there is little or no protection or resistance; that is, a large internal ring that has failed to close or a congenital sac only partially closed, empty but ready to receive the viscus, so that under the slightest or no apparent provocation a hernia is formed? Can a hernia occurring under these conditions be termed an accident? Should not such conditions be given special consideration? Excluding traumatic hernia produced by external violence, is a hernia complete in all its parts possible by a "single increase in intraabdominal pressure"?

MacReady, the greatest English authority on hernia; Graser, one of the highest German authorities on hernia, and Coley, one of the greatest American authorities on hernia,

all agree that "a hernia complete in all its parts could never arise at the moment of accident, or by a single increase in the intra-abdominal tension, be it ever so great".

Sheen says: "I consider that its (hernia) sudden, complete development in a pathological sense is impossible because the peritoneum cannot stretch suddenly to form a sac." "The sudden projection of hernial contents into the preformed sac is accompanied by definite immediate symptoms" . . . "acute pain at the site of the hernia, (patient) at once undoes his clothes, finds a small lump there, is faint, helped or carried home." . . . "a doctor is sent for" . . . Sheen concludes: . . . "A hernia may be felt for the first time during a straining effort and this is very likely to occur in the working classes who are constantly straining. This, however, is the occasion leading to the discovery of the hernia; it is not the cause."

Conclusions:

1. The definition of hernia should be changed or modified.
2. The hernial sac may be a part or the whole of a hernia.
3. A complete inguinal hernia cannot be formed suddenly by coughing, sneezing, lifting or straining.
4. An inguinal hernia that is discovered for the first time after severe straining must have had a preformed sac, hence cannot be considered an accident in the sense of a hernia following trauma.
5. Many states recognize the difference.
6. Every doctor should understand the difference.
7. The laity should know there is a difference.

APPENDICITIS IN CHILDREN AS STILL OCCASIONALLY TREATED.*

EDGAR HADLEY, M.D., TELLURIDE.

Within recent months a man, a widower with six children, five girls and a boy—a poor man and practically uneducated, walked into the office of a doctor whom he had known several years before, and began to tell of the loss of his little boy. His re-

cital was so striking that the physician called a stenographer and had the statement taken down. To avoid undue prolixity, I shall summarize the statement, giving merely the essential features.

The boy was sent home by his school teacher on account of restless behavior in school. He complained of pain in his stomach and side. Failing to improve under the domestic use of castor oil, he was taken at eight o'clock the next evening to the local physician, who examined the boy and gave him a prescription. At half past two the next morning the father fetched the doctor to the house. After another examination, the physician remarked that it was "a good deal like appendicitis", and added (as stated by the father): "Many a doctor if he were here would cut him open right now for appendicitis, but I don't believe in that so much. I consider there is too much of that done too quick." The physician came again that day and the next, and expressed the opinion that the boy was doing pretty well. On the fourth day the little boy was temporarily more or less free from pain, but that evening he became worse. On the eighth day he suffered so much that he had to be held onto the bed, and the doctor decided that pus had accumulated in the appendix, that the appendix had burst, and that an operation would have to be performed. The doctor declared that the boy could only live a few hours without operation, and stated, according to the father, that with operation there was just a chance out of a thousand for recovery. At the operation a large ruptured abscess was apparently found, and the inflated intestine caused so much trouble that it had to be punctured. A tube for drainage was left in the abdomen, no attempt being made to remove the appendix. According to the father, the doctor admitted that the operation should have been done some time previously. He spoke as though he thought the operation was going to be successful, but the patient died in about five or six hours. After death had occurred, the father again told the doctor that he had let it go too long, and the latter was said to have replied: "That's right, John."

This statement shows the shameful fact that we have still in the profession men who,

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with regard to appendicitis, hold and act upon opinions the results of which, upon the people who place their trust in these physicians, are not only deplorable but criminal. It suggests too, much to our shame, that the education of the laity regarding appendicitis in children excels that of some of our professional brethren.

The British Medical Journal for February 21st, 1914, contained a study of two hundred cases of appendicitis in children, by Gray and Mitchell. An abstract of this paper will be found in the 1915 volume of the Practical Medicine Series on General Surgery. Of these two hundred cases seventy-four, or thirty-seven per cent, were chronic or recurrent cases. All of these seventy-four cases were operated on without mortality. Of the remaining one hundred and twenty-six cases only twenty-eight, or 22 per cent, were without complications, either abscess, gangrene, peritonitis or intestinal obstruction. This means that practically 78 per cent of cases of acute appendicitis in children will become necessarily surgical cases; that is to say, that if anything is to be done giving a chance of saving life, surgery will have to be resorted to. This report shows further that in this series of one hundred and twenty-six cases of acute appendicitis the total mortality was nineteen cases, which included one death under the anesthetic. Therefore surgery offers a reasonable prospect of recovery in above 85 per cent of all cases of acute appendicitis, even though they have gone on to the point of some complicating condition such as mentioned above; and, if operated on early, before perforation occurs, the mortality should be practically nil.

How any of our professional brethren can take the position indicated in the statement to which I have called your attention is almost past belief. There may be, and doubtless are, reasons for such a condition of affairs, but there is no adequate excuse.

As compared with the general surgeon or the physician doing a large consultation practice in the city, the average general practitioner in the country districts sees relatively few cases of appendicitis in children. This may be a reason why there are

still some of them guilty of such views and practices as those mentioned in the statement, but it should not excuse them. The interests of the public and the interests of our profession demand that practitioners everywhere be well informed as to the consensus of opinion and practice as regards this subject, and that they be alert and able in the prompt recognition of so serious a disease; firm and unswerving in their advice for early operation; and skillful in the operative procedures required, or prompt in securing such skill for their patients. We are so used to seeing cases of acute indigestion in children, with perhaps some intestinal colic, that our mental attitude, as we approach a case of illness in a child with abdominal pain as one of its symptoms, is not what it should be. We are inclined to assume that it is a simple and comparatively harmless digestive disturbance until marked evidence that it is serious convinces us that it is not a simple matter. The unreliability of the subjective symptoms, and even of the history in cases of appendicitis in childhood, should render us scrupulously careful to elicit every possible objective symptom.

On the side of treatment it takes real courage, and often skill, to secure acceptance of advice as to operation in children. Nature has implanted so deeply and firmly in parents the instinct of protection of their offspring that it may often tax our ability to direct this instinct into channels such as will make it accomplish its real purpose—the good of the child.

In closing, let me quote a few words from a talk on appendicitis by Dr. J. B. Murphy:

“When we come right down to a heart to heart talk about appendicitis, the grim fact which we must admit is that we are still losing too many cases. We, the members of the profession, are responsible. There is no use in denying it. The facts concerning the symptomatology, course and the results of treatment have been thoroughly established in many clinics on a multitude of patients. A physician today has no right to hold an opinion about appendicitis radically at variance with established practice based on a personal series of only five, ten, twenty or even one hundred cases. So many able

surgeons with well organized clinics have handled and studied exhaustively thousands of cases that a man must be either a transcendent genius or an egotist who dares to oppose the present established views in terms other than those of numbers."

In conclusion I may say that I have no excuse to offer for presenting a paper on this subject, in such a small measure scientific, except that I have hoped, not to add to the sum total of our knowledge regarding appendicitis in children, but to call again to the attention of some of our fellows the necessity of falling in line and accepting completely their individual responsibilities as touching this matter.

DISCUSSION.

Charles A. Powers, Denver: No article on appendicitis is out of place in any medical gathering. Any condition which even today kills as any people as does appendicitis is worthy of constant thought.

The diagnosis of appendicitis in little children often presents a very great degree of difficulty. The younger the child, in my experience, the more difficult it is. Further, it has seemed to me that appendicitis is more treacherous in little children than in adults. A single recent case may suffice as an illustration. I was asked to see a girl of 6 who had been to school on Friday, had been feeling a trifle ill, but able to play, on Saturday, and who was seen on Sunday morning by the family physician, Dr. F. W. Kenney. The pulse was normal; the temperature was normal; there was simply a moderate degree of tenderness and rigidity at the site of the appendix. Both the family physician and I, on careful thought and consideration, advised immediate operation; the parents were in California. The aunt, under whose care the child was, desired to telegraph both parents. We told them that we would ourselves assume all of the responsibility of an immediate operation. The aunt assented, we proceeded with the operation and found a completely gangrenous appendix—this in a little child who seemingly was entirely well on Friday, a trifle ill on Saturday and but slightly ill on Sunday morning.

It has seemed to me from my own experience that, in these little children who complain, who have a little indigestion, and who are fairly tender and rigid at the site of the appendix, immediate operation is the safest and wisest course. I think, however, that a note of warning should be sounded as to the ease with which a beginning pneumonia or a beginning pleurisy in a little child may simulate appendicitis. A number of such cases have come under my observation and I always try to bear this in mind. Differential diagnosis, in these cases, is far from easy.

C. E. Tennant, Denver: The subject presented by Dr. Hadley is interesting and instructive. His recital of what I should call a surgical tragedy comes home to me because I have had in the past few months a similar experience with the little member of my own family. I also wish to say from my own experience with this kind of

work I can voice the sentiment of Dr. Powers. I have in mind the experience of two little children, both 11 years of age, one of which was my own, the other a little playmate of hers. My own child was under the charge of a careful and painstaking pediatricist, and her little playmate under the care of a neighboring general practitioner. My own child commenced with nausea, vomiting and as she described it, "stomach ache" at 7 o'clock in the morning, and developed a temperature of 100° during the day, with pain and tenderness localizing over the lower right abdominal quadrant. Within twelve hours she was on the operating table, the appendix was removed by competent surgical confrères, and an uneventful convalescence of about ten days followed, with a decided improvement in her general condition since.

Her little playmate, on the other hand, went through much the same history as has been recited here, and when she was finally operated on after a period of a week or ten days in the presence of a ruptured appendix, she had a desperate and stormy convalescence, with a subphrenic abscess later developing, finally a purulent discharge from a chronic sinus for a year, terminating in death in the last few weeks. This latter case is exactly what we may expect when the surgical lesion is neglected in these little cases, and when the consequences of neglect become evident through a ruptured appendix and pus in the abdominal cavity, then shall we frequently find in a child either complications arising in the kidney, or subphrenic abscess, or empyema. Any of these complications occurring with a child means either a permanent deformity as he or she grows up, or an arrested development, which ever after leaves a blemish. I believe that the profession must realize more fully that delay in these cases spells surgical tragedies, and it is gratifying to know that the public are already awakening to the fact and will even criticize us for not acting quickly.

With the exception of Dr. Powers' warning about pneumonia, there is no reason why we should hesitate in these little folks to make an early incision and remove the appendix. It is far better to remove a suspicious appendix than to take a chance with it; because appendicitis develops rapidly in children, and it means permanent disability for them in many instances should the appendix rupture. Then, too, we know that a chronic appendix may exist in a child and explode or rupture at any time, but if it does not become active it will invariably produce a certain amount of stomach trouble and impaired nutrition. Again the child's description of what may be going on the abdomen is very unsatisfactory as compared with that of the adult.

Children seem to bear the operation very well, and I believe they do not suffer as does the adult. A very small incision is all that is necessary, and when performed by competent surgeons convalescence is rapid and safe.

S. D. Van Meter, Denver: I wish to call attention to two causes for this lamentable crime in the diagnosis and treatment of appendicitis. First, every newspaper in the country publishes deaths after operation for appendicitis with large headlines: "John Doe died as the result of an operation for appendicitis." It is difficult to correctly educate the public on matters medical, and particularly difficult to do so when you have the opposition and obstinacy of the press to deal with. As you know, I had some experience with newspapers during my ten years' service on the state

medical board, and I am fully aware of the difficulties confronting the medical profession in their efforts to correct the vicious results of this attitude of the newspapers. The other cause is that there are still certain physicians who either consciously or unconsciously cater to the desire of the laity to avoid an operation, and you know that the public will listen attentively to anyone who can promise them relief without operation.

Twenty-five years ago I arrived in Denver, an ardent disciple of Dr. John B. Deaver, who at that time, with Dr. John B. Murphy, was a pioneer in the advocacy of the early operation for appendicitis. Through the inexperience of youth, I offended several of the older, well-established physicians in the city, particularly one I met soon after arrival in consultation in a case of appendicitis. Believing, from the advice received from my teachers, that the case should be operated upon forthwith, I took that position. Perhaps as a young man I was not sufficiently diplomatic in discussing the case with the physician, who took the stand that he did not believe in operating for appendicitis unless there was pus. That was laughable to me and laughable to everyone who had imbibed Deaver's views on appendicitis. I mention this to show the far-reaching effect of such teaching. Only one year ago I had a patient who said to me, "Doctor, had I listened to a friend's request you would not have operated on me." I said, "Why?" He replied: "My friend told me that you were simply crazy on the subject of removal of the appendix." Fortunately he did not believe that of me, and after having a bad appendix removed he was convinced that he had been misinformed. On inquiry it was found that his friend was a member of a family the head of which thought the medical opinion of the old doctor I had crossed in consultation twenty-five years ago was infallible; and who, from what he had been told by the venerable gentleman, had educated a second generation to believe that the early operation for appendicitis was a crazy fad.

I regret to say that within the sound of my voice there are gentlemen who still hold that appendicitis is a medical disease, at least for a certain number of days. Such cases as this one, so classically detailed by Dr. Hadley, should I think make us do our utmost to eradicate the erroneous views that still exist in the minds of a few physicians and many of the laity.

Will Howard Swan, Colorado Springs: As another illustration of the pernicious results of delay in appendicitis, I should like to report a case that came under my care some two or three years ago. A business man fell under the care of an osteopathic practitioner who said he had appendicitis, but that he was too fat to be operated on. The man had been going to this practitioner's office daily, having some kind of manipulative treatments. Evidently he had a good deal of manipulation. At the end of each day's treatment, the man had a large antiphlogistic poultice on his abdomen, and was allowed to do what he liked. He went to the store and attended to his business. On the ninth day of the attack he took an excursion into the country with his wife in an automobile which broke down, and he pushed the machine over a little rise of ground to get it started. At the time I saw him, on the tenth day, he had a big mass in his right side, accompanied by chills and sweats, and, to make a long story short, he had a large abscess with gangrenous appendix, and nearly lost his life. The reason I report this case is to draw attention to the fact that this practitioner was registered

by the state board of examiners of Colorado, and was licensed to practice medicine. It seems to me the public should know the sort of work such men do.

O. M. Gilbert, Boulder: Just one thought along the line suggested by Dr. Van Meter for educating the public. It is a thing I run across very frequently. There are people who are not opposed to operation, who have been well educated, and yet they say: "Doctor, is it not true that an operation is a very serious thing and leaves one in bad shape afterwards?" They will tell us that they know of many people who have remained unusually well after operation, but a great many others have not. These people and the public generally should be taught that it was the disease that got them into that condition, and not the operation. I have argued with such people that after they get well there may be subsequent trouble from the formation of adhesions, and if we go a little out of the way to impress upon them and explain to them that it is not the operation that causes the trouble but the disease, and that people can be operated on right along without any of these after effects being experienced, we shall accomplish something.

O. M. Shere, Denver: The remarks made by Dr. Gilbert can be very well accentuated by some concrete examples. I desire to call to your attention a complication in delayed operations for appendicitis which particularly occurs in children, namely, that of pyelitis.

In the past three years I have had under my observation two children, 6 and 7 years of age, respectively, in whom a diagnosis of appendicitis was made by the visiting physician, corroborated in consultation and immediate operation advised. The parents in both cases were reluctant to give their consent for operation until the symptoms became very grave, at which time they consented. Following the removal of a pus appendix, not ruptured, both children ran the typical course of the disease; the temperature dropped the next day after the operation, only to rise again on the third day to 103 and 104.5 degrees. Nothing about the site of operation or peritoneal cavity would explain the rise in temperature. A careful examination of the urine disclosed great quantities of pus coming from the kidneys, and tenderness was elicited on palpation of one of the kidneys.

This temperature subsided simultaneously with the disappearance of the pus from the urine, so that there was no question as to the explanation of the existence of such temperature. Such cases are of the kind that make the laity believe that the ordinary operation of appendicitis is responsible for the stormy convalescence which is occasionally seen in cases of delayed operation, and the more we impress upon them as well as upon doctors that early operation will prevent such a subsequent complication as pyelitis, and other metastatic infections, be they arthritic or due to emboli or infarcts, the more shall we succeed in gaining the point made by the essayist as well as by those who have discussed the paper.

George H. Cattermole, Boulder: I should like to say a few words from the standpoint of a physician in these cases. It takes all the courage a physician has nowadays to resist recommending operation on a child as soon as there is pain in the region of the appendix. We must remember that most abdominal conditions in children are not appendicitis; they are subject to indigestion and intestinal toxemias which resemble more or less appendicitis, and if we neglect to recommend operation we are criticized. On the other hand,

if we do recommend operation and the case proves to be one of indigestion or pneumonia as was mentioned, the responsibility rests upon us. How many of you have seen normal appendices removed in children who continued to suffer from the disease which gave them pain? How many appendices are diseased, and how many are normal when we remove them under all conditions? Understand me, I am not opposing the operation for appendicitis. Early operation is the right thing in appendicitis, but we must be conservative and not operate on every case simply because there is pain in the abdomen.

Bonnie O. Adams, Pueblo: I should like to ask a question: How many of you have ever seen a child who was operated on for appendicitis and did not have a diseased appendix die? We may sometimes make that mistake. We do not make that mistake so often as the mistake that was made in the case recited by Dr. Hadley. Let us be on the safe side. I want to make this point: It has been our observation that in children we may have a very profound infection, with involvement of the appendix, even with gangrene or a pus pocket, with only slight clinical symptoms. Just a day or two ago we had a child with a gangrenous appendix which gave no rise of temperature; there was a blood count of only 14,000, but the appendix was gangrenous throughout and ready to rupture. That experience has been repeated so many times that it seems to me we are certainly safe in erring on the side of early operation and considering every case as a surgical one. It is better to operate early and have 100 per cent recoveries than to sign a death certificate for a neglected or deferred case.

Dr. Powers has called our attention to an important point in differentiating between the abdominal pain of appendicitis and that which does occur sometimes in pneumonia in children. In pneumonia we may often have a rigidity of the right rectus or of both recti, but we never have a point of localized pain which causes wincing on pressure. I think that is an important point in differentiation between the abdominal pain in pneumonia and that in appendicitis. I believe that while we may have rigidity of the right rectus in pneumonia, we shall not have wincing upon pressure over the appendix. From my experience, I believe I would rather err on the side of taking out an appendix which was in no way involved than sign a death certificate as the result of neglect.

G. M. Anderson, Denver: I want to say a word or two with reference to the differential diagnosis between pneumonia and appendicitis. I have charge of an institution in the state that has 310 to 315 children. We have a good many children there who develop pain in the abdomen, with some rise of temperature and all sorts of symptoms, and I have got to see the color of the man's hair that can come out there and make a definite diagnosis between pneumonia and appendicitis. I have had the best men in Denver out there; some of them are sitting right here now, and I think we all consider them the very best in the city. We have operated upon cases of what they considered appendicitis, and all proved to be pneumonia. I remember very well, while at Fort Morgan, a case that occurred in the country and to which I was called in consultation. The child was brought to Denver and the best clinicians in Denver had that case under their charge at St. Joseph's Hospital. On the fifth day a central pneumonia developed. Dr. Hall worked hard on that case and he did not get a sign in the lung until

the fifth day of the illness.

A child will say it hurts if you touch him at all. If you press around here and there you can get them to say that it hurts anywhere. The child is afraid of you; he feels bad; he is cross and does not want you about anyhow; and to save your soul, you cannot come to any definite conclusion.

INFECTIONS OF THE HAND AND ARM.*

B. B. BLOTZ, M.D., ROCKY FORD.

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A physician is a better servant of man if he treats correctly the injured or infected hand and arm of a laboring man which plays no inconsiderable part in the future welfare of the patient and his family than by slighting this branch of surgery to become proficient in the removal of the pituitary body or in doing a short circuiting operation. Good surgical judgment in the one does not preclude the possibility of good surgical judgment in the other, yet it does not follow that it exists in the same degree.

State legislatures in over half the states have passed laws providing definite indemnities for the injuries of workmen. Some states, California for example, have gone to the extent of placing a valuation on every joint of the hand. Every possible combination of disabilities is listed in the schedules; the loss of the distal phalanx of the index finger with stiffness of the middle interphalangeal joint of the middle finger calls for a different sum from the loss of the same phalanx with stiffness of the middle joint of the little finger or of the ring finger. The compensation also varies with the class of labor and the age of the laborer.

I wish first to consider injuries and minor infections. In the work connected with the medical department of the American Beet Sugar Company on their ranches and factories we are insisting upon every case presenting itself for treatment, regardless of the triviality of the accident. The various foremen are instructed in first aid, which is simple. They are advised to cover all wounds, whether a simple abrasion or a badly injured thigh, with sterile gauze, cotton and bandage, but otherwise to leave the wound severely alone until the case is turned over to the physician. After first aid has thus

been rendered, four steps present themselves in the further dressing of the wound.

1st. The prevention of the further entrance of infective material.

2nd. Cleansing of the wound.

3rd. Repair of tissues.

4th. Drainage.

Under the first step, the prevention of the further entrance into the wound of infective material, we assume the proper regard by the surgeon of aseptic technique as relating to himself. Other than actual loss of tissue, infection stands out as the most frequent cause of later deformities. Injuries involving bone, joints and tendons require just the same carefulness in preparation on the part of the surgeon as does an abdominal section. Injuries of this extent should, if possible, receive their first surgical attention in an operating room of a hospital.

The wound should be packed gently with gauze and the surrounding area cleansed, working from the wound, with ether, alcohol and tincture of iodine. Tincture of iodine alone may suffice, yet we notice where it is used alone to cover soiled areas that wound discharges will neutralize its sealing effects and expose the wound to the danger of carrying into it infected material with subsequent dressings.

The wound is now relieved of its gauze pack and cleansed. Wounds with deep dimensions less than their surface dimensions are gently flushed with copious quantities of a weak, non-irritating antiseptic solution, sometimes followed by Wright sodium chloride and sodium citrate solution, especially if there is much involvement of tendons or fascial spaces.

Tendons are repaired, if injured, and the wound is drained with strips of rubber dam, or, as recommended by Kanavel, with strips of gauze whose meshes have been filled with sterile vaseline to prevent adhesions.

Very few stitches are taken in the closure of the wound. It is interesting to observe how well many wounds heal when the tissues have simply been replaced about the drains without a stitch being taken.

Accidents occurring about barns and corals, or gun-shot wounds, are given 1500 units of tetanus prophylactic serum.

In accidents from whose nature we expect

infection, or in which infection however mild would be a serious menace to the restoration of function, bacterial vaccine should be given prophylactically for the first three to five days, 50,000,000 of the mixed staphylococci with 10,000,000 streptococci daily.

Furuncles, carbuncles and other minor infections occurring about the hand and arm are best treated by establishing drainage early, extending the incision beyond the protective zone and packing lightly under the edges of the flaps made by the crucial incision down to the limiting fascia.

Early opening lessens their tendency toward spreading and multiplication.

Another frequently encountered minor localized infection of the hands in working men is that occurring under calluses mostly on the distal surface of the palm or the palmar surface of the proximal phalanges, caused by continued pressure from the handles of various implements, such as levers or shovels, a pressure necrosis, as it were, of the deep tissues plus pyogenic bacterial invasion. The callus acts as a barrier to the pointing of the abscess and the infection tends to spread along the tendon sheath as a path of least resistance. This infection, while I call it minor, may become of serious importance, often following along the lumbricales muscles into the palmar spaces or leading to necrosis of tendon sheaths, resulting in a stiff, deformed atrophied finger.

These infections are best treated by an incision over the point of greatest tenderness and not over the point of most prominence, unless it also happens to be the tender spot. The tender area can be well located with probe pressure, and very often a small opening with a cataract knife is sufficient to lead to the discharge of pus and to resolution.

I wish to call attention to the test incision to determine the localization of pus, that is the plunging of a cataract knife or sharp pointed bistoury into the point of maximum tenderness.

As a result of caring for our minor infections and accidents religiously from the start, we have been able to improve our

record year by year. We have economized on time for the men as well as for the physician, and best of all there are fewer deformities to greet us afterward and to serve as handicaps to the workman in his battle for bread.

As often happens, we receive infections when they have gone beyond what may be classed as minor infections, or having received the case early the condition seems to progress in spite of treatment, and we have before us an infected hand or arm in its full significance; and we also have before us a patient who today is not satisfied that we save his life or save his arm, but asks that the affected member be restored to normal.

We are much indebted to Kanavel for his articles upon this subject and his studies of the more minute anatomy of the hand. It is not within the scope of this paper to enter into anatomical discussions, except to call attention to the fact that infection of the hand and arm usually follows one of three routes: the lymphatic route, the tendon sheath route, and the fascial space route. Connected with the tendon sheath route are the various bursae, two of which, the ulnar and the radial, situated on their respective sides in the palm of the hand, deserve mention. Connected with the fascial space route, besides the subcutaneous, subaponeurotic, interosseous, and intermuscular spaces, we have in the palm the mid-palmar, thenar, and hypothenar spaces situated deeply beneath the flexor tendons. These spaces are subject to infection from the fingers, chiefly through the deep lymphatics or along the lumbricales or interossei muscles.

The recognition of the routes taken is important to treatment; multiple incisions into an arm in which the infection is purely lymphatic, often without regard for anatomical details, with the indiscriminate insertion of gauze or tube drain, is to say the least destructive surgery.

Lymphangitis is accompanied by signs of inflammation, with the well-known red line extension and glandular tenderness. Deeper lymphatic involvement does not, as a rule, exhibit the red line extension and is more confusing.

The presence of tendon sheath involvement is usually detected by extreme tenderness over the tendon or tendons, with contraction, and pain when an attempt is made to extend the tendons.

In fascial space involvement we do not meet with the localized tenderness along the course of the tendon sheaths, or if the tendons are contracted attempts at extension do not cause such extreme pain as does the same effort in tendon sheath involvement. The palmar spaces often exhibit more swelling on the dorsum of the hand, because of the resistance offered by the palmar fascia, and this may lead to misdirected incisions if the fact is not borne in mind.

Treatment: The principles involved in treatment of infections of the hand and arm are:

- 1st. Localize the infection.
- 2nd. Secure drainage if necessary.
- 3rd. Restore function.

The measures which we have at our disposal to overcome and localize the infection are directly bactericidal, as the vaccines and sera, or what may be called indirect bactericidal agents or adjuvants, such as hot moist dressings, passive hyperemia, rest, free catharsis and supportive measures.

Bacterial vaccines have been disappointing. Hot moist dressings, rest, catharsis, and supportive measures still offer us our best aids to nature in the attempt to localize the infection. Various antiseptics are used in the moist dressings but their value is questionable. They should at least not be used in very concentrated solution.

It is more important that the dressing be kept hot and moist. I use as a matter of routine a weak solution of liquor cresolis compound. The dressing is applied liberally, extending well beyond the line of infection. It in turn is inclosed by rubber muslin held in place by pinned towels. This arrangement facilitates frequent redressings.

According to Hitchens, success depends upon our ability to cause migration into the infected areas from the blood of anti-bacterial agents in sufficient quantities to overcome the infection. There are two measures at our disposal: first, those which increase

blood pressure in the part—hot moist applications increasing blood pressure in the capillaries, the Bier method increasing the blood pressure in the veins and arterial system; second, measures leading to evacuation of pus or stagnant fluids or coagulated lymph whose presence prevents the direct entrance into the focus of infection of nature's bactericidal elements.

The Bier method should be used in connection with other measures; first, in the beginning of infection, second, where infections occur in areas of poor blood supply. It should be used with care where the infection is overwhelming, for while it increases the flow of anti-bacterial elements into the affected part, it also, when constriction is removed, permits liberation of bacterial products into the circulation in sufficient quantities to cause profound systemic effects.

Incisions are made into infected areas to drain pus or to relieve excessive tension. In the event that these conditions do not exist, the necessity for incision does not exist. An uncomplicated lymphangitis never calls for incision. A tendovaginitis however, calls for early incision, for even in the absence of pus the tension in the sheath leads to extension up the arm, through the bursae or into the fascial spaces.

Incisions should be adequate but not liberal, there should be a definite reason for making every one, and they should be made at points of election.

Drainage material should be such as to cause few adhesions and little pressure upon important structures; strips of rubber dam, gauze impregnated with sterile vaseline, and the cigarette drain are to be preferred to gauze or tubing.

Restoration of function in an infected arm or hand depends not so much upon what you do after, but what you did before.

In 113 cases of infections and injuries of hands and arms coming under my care in private contract practice for the year ending April 1, 1915, 71 were minor, applying for treatment early; the loss of time from work was small, and improvement began with the first dressing. In the remaining 42 cases there was one death. The patient was 46 years of age, with chronic endocarditis and dropsy; the process began as a facial erysipelas,

extending to the arms with multiple abscesses along tendons and intermuscular spaces.

One patient had an infected thumb which he treated himself with various poultices. He later consulted me for an abscess of the leg, and in a few days developed a perinephritic abscess. Recovery was complete after drainage of the abscesses.

One case of severe lymphangitis of the left arm developed a pneumonia of the left lung. Recovery was complete.

One case of severe injury of the hand and forearm, due to its being caught in an alfalfa chopper, causing complete severance of deep and superficial flexor tendons in the palm and extensor tendons of the thumb, with a compound fracture of the forearm, developed a tendo-vaginitis extending up the arm, due partly to our failure to institute sufficient drainage in our desire to secure perfect coaptation of injured tissues. In the remaining 39 cases all but two have perfect functional results.

A further analysis of my cases shows that most of the severe cases became so because of lack of intensive treatment in the beginning, while many deformities were due to infection or misdirected surgical effort.

The various compensation acts, while to an extent a reflection on the surgery of the past, will tend to greater efficiency in the future. The hand is the laboring man's greatest helpmate, and the preservation of its integrity is our duty.

DISCUSSION.

Charles A. Powers, Denver: This topic is one of the most important which can engage our attention. We all know the tremendously serious potentiality of some of the most trivial finger and hand wounds. Even during the past year a prominent Brooklyn surgeon, Dr. A. T. Bristow, pricked his index finger while removing a gangrenous appendix, and, in spite of all the care given him by the surgeons of Brooklyn and New York, he died within seven days. Only a few years ago Dr. Axtell, of this city, during an autopsy, scratched his hand on a broken rib, and in spite of all that could be done for him, he died within a week.

Within the past two years a young man of 22 came into my office having suffered a gunshot wound of the forearm about seven days before. His hand was in chronic spasm, his jaw was a little stiff, he was evidently in the beginning of tetanus. In spite of all that I and my colleagues could do for him he died within three days.

Surgeons and physicians and anatomists are

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themselves particularly liable to these very virulent infections, and we should not forget that accidental or innocent inoculation with syphilis is by no means infrequent among men of medicine. Tuberculosis not infrequently affects pathologists and anatomists. As Dr. Blotz has said, the free prophylactic use of tetanus antitoxin is of the first importance and should be a routine measure. Bullet wounds, toy pistol wounds, deep punctured wounds, may well be thoroughly opened up under a local anesthetic, washed out and packed, air being given access.

As to the management of the diffuse severe infections, those which have already developed when the patient comes to us, our watchword should be thoroughness, early and very free, very thorough incisions and drainage. We have all of us seen these dreadful cases of streptococcal infection which so rapidly travels up the sheaths of the tendons and up the fascial spaces and passes under the anterior annular ligament, up the forearm and up the arm. This infection most often affects the upper extremity, although it may attack the lower extremity. The injured limb is perhaps double its normal size, it is edematous, red, porky to the feel; the temperature is fairly high, the pulse is fairly high. These cases should have the freest possible, deep incisions, incisions always through the deep fascia and down to the muscles. It seems to me a very good rule is to incise as freely and as deeply as one may think necessary, and then begin again and do a good bit more. In my own cases I have never felt that I have erred on the side of doing too much. In the hand, deep subfascial abscesses, those which so rapidly erode the palmar arches, are very important. At times one may freely divide the anterior annular ligament, separate it, and pack all openings thoroughly. Without being able, through lack of time, to take up other of the good points in Dr. Blotz' paper, I desire to conclude by emphasizing the importance of early and thorough incisions in these cases.

B. E. Blotz (closing): Just a few words in reference to the remarks made by Dr. Powers concerning deep incisions. I tried to make the point clear in connection with the diagnosis, that if you have a case purely of lymphangitis, without fascial space infection, without tendovaginitis, you will not gain anything by making incisions. You can rely on supportive methods and hot packs. When I spoke of making incisions, I should have said careless incisions, for the reason that I have seen arms that have been opened up from one end to the other with the insertion of drainage without almost any sense of anatomical detail. Many of these patients, if you saw them afterwards, had a shriveled forearm and cold hand, and one dislikes very much to see that. If you think the case is getting away from you, and beneath the fascial space there is a collection of pus, apply the tourniquet to the upper arm and, with due regard for each step, make it a bloodless operation. You can go down between the muscles, and along the muscle planes you can usually locate the pus. Put in drainage where you want to, so that later on there will be no or very few tendon adhesions. I think adhesions about tendons due to nature's inflammatory process are more easily and readily absorbed than are adhesions about tendons due to the surgeon's knife or to improper drainage material.

Dr. W. H. Sharpley, head of the Denver Department of Health and Charity, recently emphatically condemned the failure of state authorities to compel the railroads and express companies to provide proper facilities for the shipment of milk from surrounding territory into the larger cities.

The post-graduate course in ophthalmology conducted at the Medical Department of the University of Colorado has been greatly benefited by the presence of Dr. Feingold, of New Orleans, an expert pathologist in this special branch, who is staying in Denver for the summer, and who has been conducting some very interesting demonstrations in ocular pathology.

The State Board of Medical Examiners has revoked the licenses of four Denver physicians. These are: Dr. Floyd W. Noble, who was recently acquitted in the West Side Court for conspiracy in connection with the death of Miss Ruth Merriweather; Dr. Noble Hamilton, who was convicted in connection with the death of Mrs. Ada Williams; Dr. B. F. Graff, convicted in connection with the death of Mrs. Ruth Kemp; and Dr. R. E. Naylor, whose license was revoked on the ground that he was an habitual user of drugs.

The campaign conducted by the Medical Society of the City and County of Denver, with the cooperation of the Denver Dental Society, resulted in the raising of a total sum of about \$6,000 for equipment of the new meeting hall and the new library quarters now being constructed next door to the Metropolitan Building.

On the evening of August 10th, 1916, that is the day before the automobile races to the top of Pike's Peak, the El Paso County Medical Society will give a dollar dinner to which all visiting physicians, including physicians of the Colorado State Medical Society, are invited; an address will be given by Dr. Burton W. Sippey, of Chicago, on "The Treatment of Peptic Ulcer, Past and Present". Those who expect to be able to attend this dinner are requested to notify Dr. G. B. Gilmore, Colorado City, secretary of the El Paso County Medical Society, so that provision may be made for their entertainment.

Dr. McFadzean and family have returned from California, where they had spent the previous several months. The doctor is much improved in health, but will not return to active practice. He will devote himself to his farm and stock interests.

Dr. and Mrs. Sherman Bonney are back in Denver, and are residing in their new home at Twelfth avenue and Clarkson street.

Dr. William Roberts has left Denver to locate at Fruita, where he will work in partnership with Dr. R. B. Porter. Drs. Porter and Roberts were classmates in the Denver and Gross Medical College.

Among the names of medical volunteers for service with the militia and the Red Cross Association in Mexico are the following Denver County Hospital internes: Drs. Ernest Atkinson, C. W. Stremer, Horace Rosenberg, Helen Craig, C. W. Dodge, D. H. Ashley, T. W. Walker, Chester Elliott, Robert Cook, and L. W. Story.

In giving a list of names of prominent Colorado physicians who had been appointed as a Colorado State Committee on Medical Preparedness, the Denver News recently referred to these gentlemen as "an organization of physicians with international reputations formed two years ago".

The phraseology suggests the establishment of a record in rapidity of formation of international reputations. The list includes the names of such medical novices as Dr. W. W. Grant, Dr. Leonard Freeman, Dr. Edward Jackson, Dr. C. A. Powers, Dr. H. G. Wetherill, and Dr. Henry Sewall in Denver, Dr. R. W. Corwin of Pueblo, Dr. Espey of Trinidad, and Dr. Epler of Pueblo.

Dr. Margaret Long has been made Chairman of the local branch of the National Woman's Party.

Dr. Ralph Mendelson has left La Junta to take up sanitation work in the kingdom of Siam.

Dr. H. W. Bull of Grand Junction was married in June to Miss Ruth Fulwider of Denver. Dr. Bull is a former president of the Colorado State Medical Society. Shortly after the wedding ceremony Dr. and Mrs. Bull left for their honeymoon, an automobile trip through the state.

Dr. C. A. Bundsen has been elected vice-president of the Denver Swedish Business Men's Club.

Dr. W. D. Brinton of Cripple Creek was married about the middle of June to Miss Lorraine Walsh, a Cripple Creek school teacher. Dr. Brinton and his bride left Denver immediately after the wedding for an extended honeymoon trip to the South.

Dr. Frederick Grant Dryden, Colorado Fuel and Iron Company physician at Morley, was killed by being pinned under his automobile in a arroyo at Wootton early in June. Dr. Dryden had been at Morley for about nine months. He is survived by a wife and two boys.

A get together meeting for the purpose of reorganization was held recently by the Routt County Medical Society at Steamboat Springs. Addresses were given by Drs. Gilmore of Chicago and A. J. Markley of Denver. Dr. E. L. Morrow was elected president and Dr. H. C. Dodge secretary of the society.

Some thieves who stole an automobile belonging to Dr. William S. Bagot of Denver indulged in a joy ride which terminated in a leap into an excavation at First avenue and York street, with a close escape from death on the part of the riders. The car was completely wrecked.

Apropos of a joking remark by a doctor that newspapers were run for revenue only, a witty editor of Morgan County gave vent to the following retort: "What in thunder do doctors run for anyway? Do they run for glory? One good, strong, healthy doctor's bill will run this office six months. An editor works half a day for \$4 with an investment of \$8,000; a doctor looks wise and works ten minutes for \$200, with an investment of three cents for catnip and pill box that cost \$1.35. The doctor goes to college for two or three years, gets a diploma and a string of words that the devil himself could not pronounce, cultivates a look of gravity that he pawns for wisdom, gets a box of pills, a cayuse and a meat saw, and sticks out a shingle as a full-fledged doctor. An editor never gets his education finished; he learns as long as he lives, and studies all his life. He eats bran, mush and liver; he takes his pay in hay and turnips and keeps the doctor in town by refraining from printing the truth about him."

Dr. W. B. Hardesty of Denver has bought the practice of Dr. A. R. Scott in Berthoud.

Dr. S. T. McDermith of Denver was found dead in his office on June 14th. Dr. McDermith had apparently greatly improved since a stroke of apoplexy which he had two or three years ago. He was 67 years old. For twelve years he was Supreme Physician of the Fraternal Union of America.

Dr. and Mrs. Saling Simon have gone east on

a vacation. Dr. Simon will be back in Denver shortly, but his family will remain at Winneka, Ill., for the rest of the summer.

Dr. Cuthbert Powell and his family have gone away to California, where they will remain until September 1st.

An article by Dr. W. A. Jolley, giving an account of experiences in the European War, and containing twenty-four illustrations, appears in the Military Surgeon.

It has been decided to hold a Southwestern Conference on Tuberculosis at Albuquerque during the fall. This conference will embrace the states of Colorado, California, Utah, Nevada, Texas, Arizona and New Mexico. It will be distinct from the already existing Southwestern Tuberculosis Society organized a few years ago at St. Louis, and which will be held October 12th and 13th. The program of the new tuberculosis conference will be divided into three sociological sections and one medical section. The subjects discussed will include the general problem of federal control of tuberculosis, with particular reference to indigent migratory consumptives, and the principal address at the first of these sessions will be given by Dr. Farrand, President of the University of Colorado. A medical session primarily for physicians will be devoted to the general subject of early diagnosis. The secretary of the society is Dr. L. S. Peters, Albuquerque, New Mexico.

Dr. M. M. Smith, of Dallas, Texas, who for many years has published the Texas Medical News, has decided to convert the News into a national publication to be known as Medical Life Insurance and Health Conservation. Dr. Smith announces his intention to comply with the requirements of the American Medical Association and to accept only such advertising as will meet with the approval of the Association.

The Division of Epidemiology of the New York Health Department is supplying factories, department stores, banks, insurance companies, clubs, settlement houses, and other places a placard urging those who are contemplating a vacation in the country to be immunized against typhoid fever.

After a long absence from practice on account of ill health, Dr. Julius L. Mortimer has returned to active work, and has opened offices at 232 Metropolitan Building, Denver.

The Faculty of the College of Physicians and Surgeons of New York have voted in favor of the establishment of a dental department to be connected with the medical school. The admission requirements will be the same as the medical. The course will be four years, the first two years the same as those in medicine.

A recent report of the Census Bureau of the United States shows that, although in 1914 tuberculosis caused more than 10.5 per cent of all deaths in the registration area of the United States, yet the death rate from this disease has decreased from 200.7 per 100,000 of the population in 1904 to 146.8 in 1914. According to the National Association for the Study and Prevention of Tuberculosis, in 1905 the United States contained only 39 anti-tuberculosis associations, 115 sanatoriums and hospitals, 20 special clinics, and no open air schools; whereas at the close of the year 1915 there were more than 1,500 anti-tuberculosis associations, 600 sanatoriums and hospitals, 450 dispensaries and 800 open air schools.

The Philadelphia Academy of Surgery announces that essays for the Samuel D. Gross prize of fifteen hundred dollars will be received until

January 1, 1920. The conditions annexed by the testator are that the prize "shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in surgical pathology or surgical practice, founded upon original investigations, the candidates for the prize to be American citizens."

Typhus fever was reported to the Texas State Board of Health during the month of February in six counties. This invasion of typhus fever has followed the main lines of travel from the Mexican border to the interior of the state. The disease has been confined to Mexicans of recent entry in almost all the cases reported, and has not spread to any extent.

DR. C. A. POWERS IN PARIS.

From a recent letter to one of his friends in Denver, the profession will be interested to learn that Dr. Charles A. Powers is now serving in the American Hospital Ambulance, of Paris, at Neuilly-sur-Seine.

The work, he writes, is most interesting. The hospital is wonderfully managed and provides for 750 surgical beds. There is one resident house officer, who has charge of 50 beds, and who does all of the dressings with the aid of splendid nurses, both trained and auxiliary.

The hospital buildings are spacious, clean and airy, and excellently adapted for the purpose, and remarkable work is being accomplished.

The cases cared for are mostly bad septic compound fractures, and there are many severe face injuries produced by pieces of shell, shrapnel, etc., but very few bullet wounds. There are comparatively few amputations done in the hospital, as most of the necessary amputations are done in the field hospitals nearer the front. S. F. J.

Medical Societies

BOULDER COUNTY.

The regular monthly meeting of the **Boulder County Medical Society** was held Thursday night, July 6, 1916, in the Commercial Association rooms. President C. T. Burnett presided. The name of Dr. John S. Bouslog was proposed for membership. Dr. M. E. Miles and Dr. Amy Miles were elected to membership—transferring from the Kingsville, Texas, Society.

Dr. C. T. Burnett was the speaker of the evening, and gave a most interesting report of the recent meeting of the College of Physicians and Surgeons, held in Washington, D. C. His report was mainly of this meeting, but also included the meeting of the Massachusetts Medical Society in Boston, and of the A. M. A., in Detroit.

The subject of most interest was recent advances in serum therapy, including the Schick test, immunization in diphtheria and in typhoid, and the greater value of autogenous vaccines.

C. L. LARUE, Secretary.

Book Reviews

Rules for Recovery from Pulmonary Tuberculosis.

A Layman's Handbook on Treatment. By Lawrason Brown, M.D., of Saranac Lake, N. Y. Second edition, revised and enlarged. 12mo, 184 pages. Cloth, \$1.25 net. Lea & Febiger, Publishers, Philadelphia and New York, 1916. Anything from the pen of Lawrason Brown on tuberculosis is welcome.

Although this volume is intended primarily for the layman, it will prove of inestimable benefit to the physician in that he may recommend it to his patients and rest assured that nothing in the hygienic management of the case has been overlooked.

The work, although unillustrated, is clear cut in style and will answer a host of questions that patients frequently fear to ask the physician. None of the points brought out will tend to discourage the patients but rather increase their desire to continue the battle against tuberculosis.

The chapter on rest could be read by every physician with benefit if only to be able to more clearly place before his patients the need for "absolute rest", a term which is frequently used but seldom understood.

On food, the more modern views are expressed and will prevent the patient from overestimating the value of stuffing.

All of the chapters in the book are just such talks as every physician would like to give his patients. The language is clear, the figures of speech decidedly appropriate, and through all shine the fine sympathies of one who has been under the influence of that grand old man, Dr. Trudeau.

A. S. T.

Gynecology.

By William P. Graves, M.D., F.A.C.S., Professor of Gynecology at Harvard Medical School. Octavo volume of 770 pages with 424 original illustrations, 66 of them in colors. Philadelphia and London: W. B. Saunders Company, 1916. Cloth, \$7 net; half Morocco, \$8.50 net.

This is an extremely able and well-planned work on gynecology. It is divided into three parts. The first part deals with the physiology and the relationship of gynecology to the general organism, including the internal secretions. The treatment of relationship of gynecology to the other organs is a new departure and one which is very valuable both to the student and the practitioner. The author gives a short space to the serodiagnosis of pregnancy and cancer.

The second part contains the general subject of gynecology—inflammations, new growths, defects of development, malpositions, injuries, and special diseases, beside a chapter giving the general symptomatology.

The third part is entirely devoted to the gynecological operations, which include operations on the bladder, rectum, abdominal wall and kidney. Here the author has chosen the operations which he thinks best and has given them in a clear way with fine illustrations which make the technic of each operation easily understood.

The book is closed with a general survey of operative technic which includes the examination before and the after care of the patient.

This book makes a valuable addition to the recent literature on the subject of gynecology.

M. R. S.

International Clinics. Vol. II., 26th Series, 1916. Philadelphia and London: J. B. Lippincott Company.

Some very instructive papers appear in this number of the Clinics. A strong plea is made for more frequent use of venesection, a measure intended more for the relief of symptoms than for the treatment of disease. In the treatment of tetanus the use of magnesium sulphate is strongly recommended, with the caution that an overdose injected intraspinaly will easily cause a sudden paralysis of respiration; for intraspinal dose Young advises 1 c.c. of a 25 per cent. solution per 20 pounds of body weight.

In a discussion of lung abscess, Claytor states that four of his last seven cases followed nose and throat operations, and considers the manner of anesthesia in great part responsible.

Stoll, in a paper on peribronchial tuberculosis in children, after a most thorough review of the literature, seems to make d'Espine's sign almost conclusive evidence of hilum disease, but states that the most reliable information is gained from the X-ray.

The big paper of the Clinics is an analysis of fifty cases of dysthyroidism, by Swan, but no conclusions are reached, and the reader becomes lost in a mass of testimony.

The section on surgery includes a good discussion of colon resection. Two other articles on cancer are well presented, and lastly Osgood offers a brief review of orthopedic problems presented by the European war. R. G. P.

The Clinics of John B. Murphy, M. D., at Mercy Hospital, Chicago. Vol. III., No. 3 (June, 1916). Octavo of 176 pages, 42 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Price, per year, paper, \$8; cloth, \$12.

This number is devoted almost entirely to abdominal conditions, and the various diseases of the gall bladder are well differentiated.

The success that Murphy says he has in giving "colossal" doses of arsenic in the treatment of certain sarcomata is nothing short of miraculous, and here he is, curing a case he has diagnosed as multiple sarcomata of the skin. Likewise, he claims, in a case of neoplasms of both kidneys, that both growths are diminishing under X-ray and arsenic. Coley's serum is also advocated in many of his sarcoma cases, and he states that he has had some complete cures.

One of the best discussions in this number is that by Charles Louis Mix, on gastric and duodenal ulcers and their diagnosis.

On the whole, this number of The Clinics is an excellent review of other numbers and very little new material is given. R. G. P.

Miscellaneous Publications received. (1) United Fruit Company Medical Department's annual report, 1915. (2) Nitro by Hypo, by Edwin T. Haworth, Kansas City, The Willows Magazine Company. (3) The Colorado Industrial Plan by John D. Rockefeller, Jr.

Sun Temple, Mesa Verde National Park.—A new and mysterious type of prehistoric ruin which has recently been discovered is described in a publication entitled "Excavation and Repair of Sun Temple, Mesa Verde National Park," by J. Walter Fewkes, which has just been issued by the Department of the Interior. This ruin is of a type hitherto unknown in the park, and it shows the

best masonry and is the most mysterious structure yet discovered in a region rich in so many prehistoric remains. Although at first there was some doubt as to the use of this building, it was early recognized that it was not constructed for habitation, and it is now believed that it was intended for the performance of rites and ceremonies; the first of its type devoted to religious purposes yet recognized in the Southwest. This publication, which may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 15 cents, contains a description of the ruin and an account of the methods of excavation and reconstruction. The exact age of the ruin is somewhat problematical, but a large juniper that grew on the mound about the wall gave a clue to the time that has elapsed since the structure was abandoned. This tree undoubtedly sprouted after the desertion of the building and grew after a mound had developed from fallen walls. Its roots penetrated into the adjacent rooms and derived nourishment from the soil filling them. A section of this tree at that point was found to have 360 annual rings; its heart was decayed, but its size suggested other rings, and that a few more years can be added to its age. It is not improbable that this tree began to grow on the top of the Sun Temple mound shortly after the year 1540, when Colorado first entered New Mexico, but how great an interval elapsed during which the walls fell to form the mound in which it grew and how much earlier the foundations of the ruined walls were laid no one can tell. A conservative guess of 250 years is allowable for the interval between construction and the time the cedar began to sprout, thus carrying the antiquity of Sun Temple back to about 1300 A. D.

Preventive Health Insurance.—Twenty-five out of every 1,000 employes in American industries, according to recent statistics, are constantly incapacitated by sickness, the average worker losing approximately nine days each year on this account. This "non-effective rate" for the great army of industrial workers in the United States barely suggests the total money loss to employers and employes. The lessened efficiency, the effects of reduced earnings in times of sickness, as well as the cost of medical attention, and the economic loss from deaths, swell the cost to industry and to the nation to almost incalculable figures.

That much of this loss is nothing less than preventable waste and that this waste can be largely reduced by a properly conducted system of governmental health insurance for wage workers are conclusions set forth in Public Health Bulletin No. 76, containing the results of a study of "Health Insurance—Its Relation to the Public Health," just issued by the United States Public Health Service.

The preventive value of health insurance is given especial emphasis in this study. "Any system of health insurance for the United States or any State should at its inception have prevention of sickness as one of its fundamental purposes," says the bulletin. "This country should profit by the experience of European countries where prevention is being recognized as the central idea necessary to health insurance if health insurance is to attain its greatest success in improving the health and efficiency of the industrial population."

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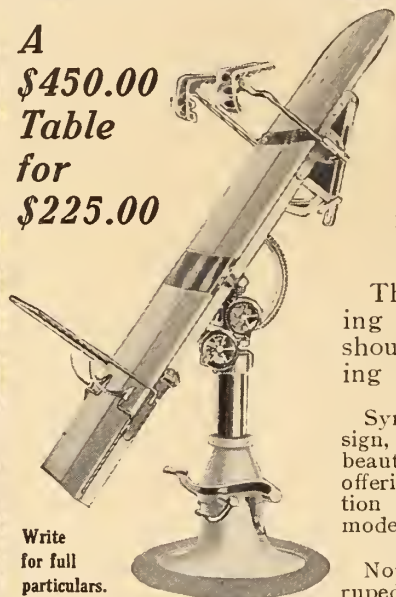
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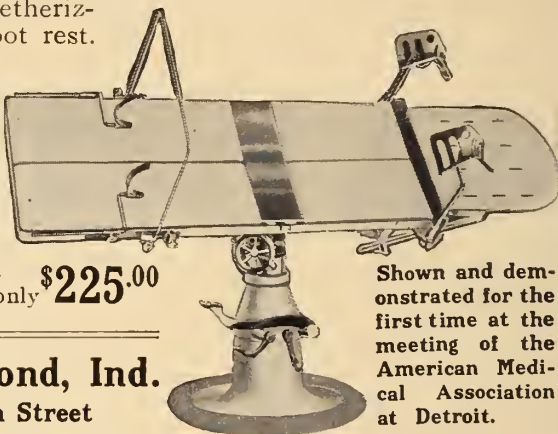
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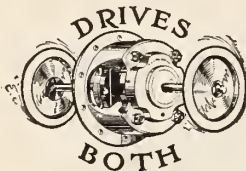
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No. 8

Editorial Comment

THE MEDICAL PRACTICE ACT.

The bill providing for licensure to practice the healing art in Colorado, which was supported by the legislative committees of the Colorado State Medical Society and the Medical Society of the City and County of Denver, and which was passed by the last legislature by almost unanimous vote, and later signed by the Governor, is now before the Supreme Court on a question of the right of the Secretary of State to refuse a referendum vote of the people on what he decided an insufficient and fraudulent petition.

The court has held by the opinion under attack that the oath taken by the protestants was not in proper form and that for this reason the Secretary of State could not legally act. It will be noted that the decision is strictly technical and does not deal with the merits of the question nor decide any of the many points connected with the question of referendum, involving frauds in petitions, the right of the Secretary of State to determine the sufficiency of a petition, etc., which the protestants to the petition sought to have determined.

A petition for rehearing with the privilege of correcting the records of the oath has been filed. It is hoped by this action to have the case considered on its merits and not dismissed on a technicality which determines nothing.

Should the court refuse to reverse itself, and thus refuse to consider the question of law involved in the matter of referendum and the right of the Secretary of State to determine the sufficiency of a referendum

petition; or if it consider these questions and decide against the contentions of the protestants, the bill will go to the people for their approval or disapproval.

In this latter event it will become the duty of the friends of the bill not only to vote for it but to use their influence with voters generally to do likewise. Were the provisions of the bill and its purposes understood there would be no need of personal work on the part of the medical profession. Unfortunately it is a long bill, more or less complex, and not readily understood by one not familiar with legal documents. And likewise unfortunately there is a rather large number of individuals who, however much they may love their family physician, have a general distrust of physicians as a class. This distrust is played on by all that large class of healers who do not have educational qualifications and yet who are sufficiently familiar with the various confidence games to work them to the limit. The influence of the Medical Freedom League is against any and all acts promulgated by the medical profession in the interest of public health, and of course will be solidly against this bill.

These are facts too well known to need more than their suggestion.

The fact upon which we wish to lay special stress is that votes are necessary to carry any measure, and in this case those who regard licensure to practice the healing art as a public health measure are expected to give their active support and influence. Defeat of the measure will mean that there are practically no restrictions on the right to practice the healing art in Colorado.

DAVID A. STRICKLER,
Secretary, State Board of Medical Examiners.

THE STREPTOCOCCUS IN HERPES ZOSTER.

Step by step, the elaborately painstaking work of modern bacteriologists is lifting the veil of mystery as to the causation of hitherto obscure diseases. It seems likely that we shall have to award the palm of honor for variety in the disturbances it may produce to the streptococcus. Therapeutically, the gain from our accumulation of knowledge in this direction is likely to be rather slow and gradual, and may arise solely or entirely from our greater appreciation of the significance of focal infections.

Rosenow and Oftedal have already reported the production of herpes of the skin, tongue and lips, and of disturbances in the corresponding ganglia, in animals injected with streptococci isolated from the tonsils, pyorrheal pockets, the sputum, and the spinal fluid in human cases of herpes. In a further paper (*The Journal of Infectious Diseases*, May, 1916), they record the results of cultures and other findings in a series of cases. Modern knowledge concerning the etiology of herpes zoster begins with the demonstration by Von Bärensprung in 1861 of an acute inflammatory condition of the ganglion corresponding to the region affected. A number of other authors, including Boeck, Head and Campbell, Sunde, and Trevisanillo, have from time to time increased the evidence available as to the bacteriological character of the disease. Head and Campbell regarded the disease as an acute posterior poliomyelitis, Sunde found diplococci in the Gasserian ganglion, and Trevisanillo isolated pneumococci from the vesicles in herpes of the lips in four cases of pneumonia. Several workers have offered evidence as to the simultaneous occurrence of an external herpes zoster with visceral disturbances of a similar character.

In the experiments now reported, cultures were made from pus expressed from crypts and abscesses in the tonsils; from pyorrheal pockets; and from blister fluid. The results appeared to indicate that herpes zoster is due to a streptococcus having an elective affinity for the ganglia and the posterior roots. These organisms lose their characteristic affinity after cultivation on artificial media,

after animal passage, and apparently also in the original focus of infection after recovery; so that Rosenow and Oftedal believe that the atrium of infection is not only the place of entrance, but a breeding place in which the streptococci, in symbiosis with other bacteria and under varying grades of oxygen pressure, acquire the special properties by virtue of which they produce this particular disease. Of a large number of animals which were injected with cultures from other diseases, none exhibited typical herpes.

Cases have been reported in which herpes zoster complicated gastric ulcer. Rosenow and Oftedal do not believe that this is due to a reflex arc or to an infection of the ganglia by way of the nerve lymphatics, but regard the association as being caused by a hematogenous infection from a focus harboring streptococci that have an elective affinity for the nerve structures. This belief is borne out by the occurrence in eight per cent. of the animals experimented upon of ulcer of the stomach, proved to be due to local streptococcal infection in the mucous membrane.

Generally speaking, streptococci are absent from the clear blister fluid both in man and animals when these organisms are present in the ganglia; but in one of the human cases encountered by Rosenow and Oftedal the germ was found in the turbid bloody blister fluid, and the organism was also present in the severe peripheral lesions in experimental cases of the disease, although there were no bacteria nor demonstrable changes in the intervening nerve trunks. It is therefore suggested that the peripheral lesions of the milder cases are trophic in character, but that the severer lesions are the results of a superimposed hematogenous infection.

RECREATIONS.

It is said that physicians seldom take their own medicine. It is perhaps true that no section of the community is so faithless in following medical advice as the members of the medical profession. Although physicians as a whole have rather generally recog-

nized the importance of the toxic influence of alcohol and tobacco, it can hardly be doubted that they consume at least a due proportion of both poisons. A careful survey of doctors' offices during the winter months would be likely to demonstrate a rather striking lack of apparent appreciation of the value of fresh air. It is human not to practice what one preaches.

Most physicians are nowadays fairly well aware of the value and importance of systematic recreation—as applied to their patients. Perhaps the average doctor's professional life is so essentially irregular and precarious that systematic habits become foreign to his nature. The great majority of physicians have no regular hours of duty, and therefore no period set definitely apart for rest and recreation. Much, however, might be done by most of them for the better ordering of their lives in this particular. Too many of us work for lengthy periods under excessive tension, and with inadequate relaxation, only to reach a state of body and mind in which a somewhat prolonged interval of complete departure from the usual routine is more or less forced upon us. At such times we are rather prone to travel long distances from our customary abodes, often merely exchanging one form of nervous excitement and fatigue for another.

We meet some people who never seem to need a vacation, and in many instances we shall find that this is because the routine of their lives is regularly interspersed with brief recreational periods. If we in Colorado advertise our state as the potential playground of the continent, why is it necessary for us who live here to seek escape from the monotony of our work by journeying, at great expense and with much waste of energy, to other and less desirable localities? The simple fact is that many of us who reside in Colorado never surrender ourselves to the opportunities for enjoyment and profit afforded by its climate and scenery. If Americans should see America first, surely Coloradans should become familiar with some of the numberless beauties of their own alpine state. If, from week to week throughout a large part of the year, many of us physicians made more system-

atic and regular use of the opportunities for outdoor sport and exercise which our climate so consistently affords, although perhaps an occasional patient would escape our clutches and fall into the hands of a rival physician, yet in the long run we should probably be the gainers, not only in mental and physical health and vigor, but in the magnitude of our banking account. One reason why our forefathers did not need to pay so much attention to the subject of vacations as we do was that they took frequent small vacations at home. If some enterprising evangelist would undertake to preach to our large city populations and their municipal administrators the value of physical sports and of the provision of abundant playground facilities, not only for childhood and early youth, but also for adults, those "children of a larger growth", he might perform an even truer service to the community than was ever rendered by a Billy Sunday or a Gipsy Smith.

Original Articles

THE TONSILS AND THEIR RELATION TO SYSTEMIC INFECTIONS.*

D. A. VANDERHOOF, M.D.,
COLORADO SPRINGS.

This subject, although much dwelt upon during the last few years, still affords much room for serious discussion and thought.

There are many first-class men today who little realize that the origin of acute articular rheumatism, appendicitis, acute nephritis, acute endocarditis, and many of the other systemic diseases, is to be found in a diseased tonsil.

For a number of years it was believed that the inflammation in the tonsil was but the local manifestation of a general systemic condition producing these diseases, but now we believe these diseases are secondary to, and caused by, the local inflammation beginning in the tonsils.

I do not mean to infer that the above diseases are always caused by local infection in the tonsil, but such men as Frank Billings,

*Read before the El Paso County Medical Society, April, 1916.

G. E. Shambaugh, Otto Freer, and T. F. Barnhill, with many others, have proven to their own satisfaction, and to the satisfaction of the medical profession as a whole, that a local infection, either in a tonsil or underneath the scar tissue after an enucleation, is the cause of most of our systemic infections.

The faucial tonsils are more frequently the seat of severe acute infections than any other organ in the body. The reason for this is that they are situated in such a position in the pharynx that they are easily subjected to external irritation and infection, while their deep crypts retain latent foci of infections which often produce serious systemic infections. These general infections do not always occur immediately following acute infections of the tonsils, but more frequently after several attacks have taken place. These attacks produce pathological changes both in the crypts and tonsils themselves, thus interfering with drainage and producing absorption.

The question of diagnosis is an all important one. Which tonsils should be removed? The large pedunculous tonsils are usually not the ones which cause systemic infections, but the ones which are small in size and have deep pockets where latent foci of infection remain quiescent until some external irritation, or a lowering of the resistance of the patient, starts trouble in some part of the human system. Many of these patients have entirely forgotten that they have ever been victims of a tonsillitis, and it is sometimes necessary to inquire into their childhood days before the history of an attack of tonsillitis can be found.

(a) The recognition of a chronically infected tonsil is not always an easy matter, and if the same patient was presented to a number of specialists you would find a great diversity of opinion. There are many today who claim that chronic infection of the faucial tonsil is a rare condition, while others claim they rarely see a normal tonsil in an adult. I believe that the large tonsils are not so often the cause of systemic infections, but the small tonsils, and especially the ones which we see overgrown by the anterior pillar, the tonsils in which we find cheesy con-

cretions. These usually show a chronic infection, and it is in most of these that we find the anterior pillar deeply congested. Occasionally one finds tonsils which contain at the base a fair sized chronic abscess, but it is more common to find cases where we can only express pus from one or more points in the tonsil.

In the city where I was located before coming to Colorado we had a very fine school inspector in the person of a very competent physician. His work was done very thoroughly, with the result that many children with enlarged tonsils found their way to a specialist. All the history they bring is that they have enlarged tonsils. They complain of no trouble at all. What are we to do in these cases? If we say let these children go until they have trouble, are we doing the right thing by them? Why let them go until they show positive evidences of a rheumatic infection, or one of the many systemic infections which we have proven to be due to this organ?

We are very prone to speak of the good results obtained from tonsil operations, but what about the bad results, such as the formation of cicatricial tissue and the cases which have rheumatism just as badly after the operation as they did previously? Did we examine the teeth and the nasal accessory sinuses? These should be carefully looked into in all cases where no history of definite trouble can be found in the tonsils themselves.

It is a matter of experience with those who follow up their cases that a great many of those who have suffered for years with any of these chronic infections are not relieved to any great degree, due to the fact that as time has gone on certain pathological changes have taken place, thus making a cure impossible.

Experiments have proven time and time again that tuberculous infections of the lungs can be caused, and have been caused, by the tonsils first having become infected through food as the vehicle. The cervical glands form a direct route to the pleura and the lungs and especially to the apices, those parts of the lungs where the primary infection is usually found.

Wood, of Philadelphia, has done a great deal of original work along this line. By applying tubercle bacilli to the back of the mouths of swine he rapidly produced primary tuberculosis of the tonsils, which was followed in a short time by tuberculosis of the submaxillary and cervical glands and extensive disease of the lungs. The mesenteric and bronchial glands were also diseased.

Dr. McLochlan, of the University of Pittsburgh, in a study of 350 pairs of tonsils, says: "We have observed that when symptoms of acute tonsillitis are present there is always a pathologic basis as shown by ulceration of the lining of the crypt. We therefore feel that a similar lesion is present in the tonsillitis preceding rheumatism and, as far as we know, this lesion differs in no way from acute lacunar tonsillitis. We regard the ulceration of the lining of the crypts as being the vulnerable point of entry of organisms from the mouth. It matters little, apparently, what bacteria have produced the lesion, for once the ulcer has formed it is possible for any type of organism to gain access to the deeper tissues.

"Such is the probable origin of acute rheumatic fever following tonsillitis. The tonsillitis is not rheumatic but pyogenic in origin and the development of rheumatism is in all probability due to an overwhelming invasion of the rheumatic infection, the nature of which is not definitely known."

The statements of Aschoff and Cohn to the effect that if appendicitis commonly is embolic in origin it must be due to bacteria having elective affinity for the appendix, would seem to correspond to facts. The evidence in favor of the view that a focus of infection is in the tonsils or teeth is strong. The fact that the strains, both from the tonsil and appendix, which showed an affinity for the appendix, were different from the usual streptococcus normally present in the intestinal tract, which did not show such an affinity, also speaks in favor of the view that the primary focus is in the tonsils or teeth.

The results of the observations and experiments of Dr. Rosenow indicate that appendicitis, in the absence of foreign bodies, commonly is a hematogenous infection, second-

ary to some distant focus, and that it develops when for some reason or other the organisms in the focus, usually streptococci, have acquired an elective affinity for the appendix, and have at the same time gained entrance into the circulation.

The strains of streptococci derived from the tonsil, which Rosenow has found to have an affinity for the appendix, formed short chains, much acid and a diffuse turbidity in ascites-dextrose broth, but no clumps and, with but two exceptions, produced a moderate amount of green on blood-agar plates.

It is a very interesting fact that after the isolation of the streptococci from the tonsil, and their injection into one of the lower animals, the tissue which becomes infected depends entirely upon the virulency of the strain. The same strain which when virulent produces gastric ulcer and cholecystitis produces appendicitis after it has lost some of its virulency from cultivation on artificial media.

Streptococci of greater virulence are found to produce lesions in tissues whose blood supply, and therefore oxygen and food requirements, are high (stomach, kidneys, lungs, etc.), hence localization and production of injury seem to be closely related to the amount of available oxygen in a given tissue.

I will cite a case which came under Dr. Rosenow's care while he was at the Presbyterian Hospital in Chicago:

Case 210. Acute appendicitis in woman 19 years of age following an attack of sore throat.

On November 30th, twelve hours after the symptoms of appendicitis began, a hyperemic and swollen appendix, 8 cm. in length, was removed by Dr. C. B. Davis. The lumen contains a moderate amount of bloody pus; there are no concretions or constrictions; the mucous membrane is hemorrhagic throughout. Smears from the pus show a large number of Gram-staining diplococci and short chains and a few bacilli resembling colon and fusiform bacilli.

The cultures from the pus yield streptococci, colon bacilli, the bacillus welchii and an unidentified bacillus. In horse serum there develops an almost pure culture of streptococci. Blood-agar plates show that

the streptococci from all places in the appendix produce similar colonies.

On December 2nd the cultures from small amount of pus expressed from the inflamed tonsil in ascites-dextrose-tissue broth show short-chained streptococci and fusiform bacilli. Blood-agar plates show a large preponderance of green-producing streptococci. In the animal experiments the original cultures in ascites-dextrose broth, containing a mixture of colon bacilli and streptococci from the lumen and wall of the appendix, the pure culture of the streptococcus from the peritoneal coat, and the mixture of streptococcus and fusiform bacillus from the tonsil produced pronounced lesions in the appendix in four of six rabbits.

It is an interesting fact that in this special case no appendicitis was produced in rabbits when an injection was made from the streptococci derived directly from the tonsils, while in many cases changes in the appendix were produced. In these same cases when cultures were taken a few days later and injected into rabbits, no changes whatsoever were produced.

Dr. Rosenow has also proven that eye lesions may be caused by these infections. A strain which had been isolated eleven years previously as a pneumococcus, and which had long since lost its virulence, was passed successively through seventeen animals without producing eye lesions in a single instance, but in the eighteenth passage it produced suppurative conjunctivitis in the only rabbit injected. In the nineteenth passage it produced iritis. In the twentieth passage it produced suppurative conjunctivitis associated with iritis. Subsequent passages failed to produce eye lesions.

I should like to report a few interesting personal cases, and have selected only those which showed very definite rheumatic symptoms.

Case 1. Mr. F. T., age 36. Has had rheumatism for the past ten years at intervals. During the last year has been bilious and has suffered a great deal with indigestion. His work, which has been police duty in the city, has been very arduous for him and the eight hours during which it has been necessary for him to be on his feet incapacitated

him for the rest of the day, producing, as he says, pain and a feeling of weakness in the joints. Sleeps fairly well but does not feel so well rested in the mornings as he should.

When I first saw him early in 1915 he was complaining of a great deal of pain in the ankles and wrists. This had been especially severe of late and it had become necessary for him to give up his work temporarily.

Temperature was normal. Urine and blood examinations were both negative. Weight 150 pounds.

Tonsils were very large and soft with openings to the crypts prominent. It was very easy in these tonsils to express a whitish-colored secretion from the crypts.

A few days later the tonsils were removed under local anesthesia. His recovery, both from the operation and the rheumatic symptoms which were present at the time of the operation, was all that could be wished for.

Checking him up a year later we find that since shortly after the operation his rheumatic trouble has entirely disappeared. He now weighs 175 pounds, and after his day's work on the force he is able to work in his garden without any bad results. Appetite and general condition are fine.

Case 2. J. P., male, age 9 years. This child has had colds followed by sore throat every winter since about 4 years of age. Very little trouble, if any, during the summer months, but as soon as the cold weather sets in his throat begins to bother him and keeps it up off and on all winter. When about 7 years of age he had his first attack of rheumatism, which was mild and only affected his ankles and knees, but as the winter wore on the attacks became more severe in these parts and were followed by high temperature and prostration. As summer came on he improved and did nicely until the following winter, when he again had a sore throat followed by a more severe attack of rheumatism than he had ever had before. At this time nearly all of his joints were affected and he was confined to his bed from two to three weeks after each attack. His tonsils were small, but both an-

terior pillars showed a great deal of chronic congestion. No secretion to speak of could be expressed from either tonsil. The tonsils were removed under general anesthesia with very little adenoid tissue.

Bacteriological examination showed a few staphylococci, but mostly streptococci. Autogenous vaccine was made, of which he was given by Dr. Moses 5,000,000 to start in on and the last dose, which was given about five months later, had been slowly increased to 120,000,000. Dr. Bortree made the vaccine.

There has been no rheumatic trouble at all since the operation, neither has there been any complaint of stiffness in the joints even during the most severe weather.

Case 3. Mr. C., age 20. Had tonsillitis about four years ago. Does not remember having it previous to that time. Last December had another attack with temperature and all the characteristic symptoms of a follicular tonsillitis. About three weeks later had a little stiffness in knees which was followed in two weeks by stiffness in ankles and feet. There was some swelling of feet, also first and second toe joints and both shoulders. A few weeks later when he was able he went to a hospital and took sweat baths, which cleared everything up to a great extent. Following this last attack he was bothered to a slight extent in all the joints inasmuch as they became a little sore and lame at times. At the time he was operated on, the left foot was quite badly swollen, also the index finger of the right hand, while there was some stiffness in both knee joints. These parts were painful at times. His tonsils were very large, nearly meeting in the median line, and there was slight congestion of both anterior pillars.

The tonsils were removed under local anesthesia, and upon bacteriological examination staphylococci, pneumococci and streptococci were found, pneumococci predominating. Has had no trouble since operation except a little swelling of the index finger, but no pain. The swelling of the finger slowly improved. Dr. Shivers has been giving him a stock vaccine. This case is of very recent date, and it is of course impossible to judge accurately as to permanent

results until after at least a year's time.

Case 4. Miss B., age 20. Has had frequent sore throat for about eight years, and often in between these severe attacks she has just a little feeling of soreness when the weather is cold and damp. The rheumatic trouble has been in the joints, usually starting in the ankles and knees and rapidly developing in the other joints within a week or two. During one of these spells it was situated in the spine and in the jaw. During the time the trouble was in the jaw it was impossible for her to talk, and it was only with difficulty that she was able to be given nourishment.

In this case the rheumatic condition did not seem to be worse immediately following the attacks of sore throat.

When about eighteen years of age she developed a mitral regurgitation, and following this at times she would have spells of weakness and everything would turn black, pulse would become very weak and she would for a moment lose consciousness.

The tonsils, which were small and had all appearances of being badly diseased, were removed under local anesthesia. Since that time she has had one slight attack of rheumatism, although during the damp weather she would complain of stiffness in the joints, but no pains and no special inconvenience. She thinks this stiffness is slowly disappearing. The valvular lesion has not improved.

Bacteriological examination showed streptococci and staphylococci, the streptococci predominating.

Case 5. Miss W., age 26. It was very hard to elicit any history of tonsillitis in this case. Patient said that for many years she had had slight attacks of sore throat and once when in college she had what she called an ulcerated sore throat.

When about fifteen she had inflammatory rheumatism for the first time, at which time it was confined to both feet and lasted about two weeks. She had no more attacks until about two years ago when it again returned in different parts of the body, but much lighter than the first attack. When I first saw her she had just had a severe attack and had been in bed for about ten weeks. This attack I found followed short-

ly after an attack of follicular tonsillitis.

I examined her just as soon as she was able to get up and around. The tonsils appeared very small and there was almost no congestion of the anterior pillar on either side. I could find no positive indication for removing them except the history of tonsillitis just previous to this last attack.

They were removed under local anesthesia and were found to be of fair size. Both tonsils contained a great deal of cheesy matter.

Bacteriological examination showed pneumococci, staphylococci, and streptococci, pneumococci predominating.

Stock mixed vaccine was given.

The patient has not had a single attack of rheumatism since the operation, neither has she had any uncomfortable feeling in the joints at any time. The tired feeling has entirely disappeared and she says she now feels in perfect health.

Case 6. Mrs. A., age 23. Had follicular tonsillitis at frequent intervals when a small child. About three years ago had a severe attack of la grippe. There was some sore throat following this but nothing of a severe nature. Two or three weeks later she noticed some stiffness of knee joints when she would attempt to arise. This condition did not improve and as time went on she developed rheumatic trouble in the various joints. Pains were especially severe in the chest at times.

When I first saw her in March, 1915, she walked with difficulty, and when she had been lying down for a little while it was almost impossible for her to get up alone. She had a rise of temperature at various times during these attacks.

The tonsils were removed under local anesthesia. There was considerable pus in both. She seemed worse for a short time following the operation, undoubtedly due to the sudden releasing of much infection into the general circulation. After this acute flare-up she began to improve, and a year later we find her in the best of health, with a gain of fifteen pounds in weight, and no stiffness of joints even during severe weather.

In a series of twenty-three cases, the ton-

sils of which were examined at the laboratory of Drs. Webb and Gilbert, the pneumococci were found to be the predominating organism. Out of this number tubercle bacilli were isolated in only one case.

POSTPARTUM HEMORRHAGE, ITS MANAGEMENT*

Report of Illustrative Cases.

JOHN LINDAHL, M.D., DENVER.

It may be that the subject of postpartum hemorrhage is time-worn, and that any further consideration of it seems superfluous. Yet certain aspects of it do not appear to have received the emphasis they deserve. This is particularly so regarding concealed postpartum hemorrhage, and as to the estimation of the amount of blood lost and the size of the uterus during the third stage of labor and the puerperium.

Postpartum loss of blood is normally present in all cases, and has occurred with and since the first born on earth. This loss when it exceeds five hundred c.c. to seven hundred and fifty c.c., depending somewhat upon the size of the woman, is called postpartum hemorrhage.

A loss of 1000 to 1500 c.c. may prove fatal in weak anemic women, 2000 c.c. is very dangerous, and a loss of 3000 c.c. is fatal in all cases. A normal healthy woman stands the loss of 500 to 750 c.c. without any disturbance, as she is fortified by increased blood volume and (De Lee says) "a leucocytosis of 16000 at the beginning of labor". She is also fortified by the arrangement of the uterine sinuses and muscular fibres in the body of the uterus. The vascular sinuses are arranged one above the other, and the openings are guarded by rings of muscular fibres. They are also placed between layers of muscular fibres in such a way that when these fibres of the uterine musculature contract, the different layers slide past one another, and bend the uterine sinuses at an acute angle. The sinuses are canals between the muscular fibres, lined by endothelial cells. The closure of the sinuses is thus dependent upon muscular action. The blood

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that remains in the uterine sinuses as they are bent and compressed coagulates readily if it contains the normal thrombokinase. It may not be out of place to consider some of the well known etiologic factors in postpartum hemorrhage, so as better to understand the principles on which management should be based. These factors include uterine exhaustion due to prolonged labor on account of a rigid os, disproportion between the size of the fetus and pelvis, pelvic deformity of various kinds, obstruction by uterine and ovarian tumors, over distention of the uterus from hydramnios, multiple births, deficient or weak musculature from lack of development due to deficient nourishment, and industrial occupations that deprive the individual of fresh air during the developing period. Women of sedentary habits have generally weak expulsive force, as also have highly cultured women in whom the mental qualities has been educated at the expense of the physical. A weak uterine musculature may also be an inherited factor. The writer has observed where the mother and daughter have exhibited this by protracted labor, and a proclivity to excessive flow. Hemorrhagic diathesis is seldom transmitted to the female, yet sufficiently to be reckoned with in postpartum hemorrhage. De Lee quotes one case of fatal postpartum hemorrhage from Ahlfeld's and one from Wells' practice, two fatal from his own, and two very severe cases which barely escaped with their lives. That want of thrombin or thrombokinase in the blood is a factor in postpartum as well as other hemorrhages is proven by the fact that although the uterus in some cases of complete relaxation is as limp as a wet rag, yet there is no hemorrhage, because of rapid and perfect coagulation of the blood. Other disturbing factors are marasmus and anemia from kidney conditions, plumbism, intestinal parasites, tuberculosis, debilitating warm climates (Playfair¹ says that the greatest danger to childbearing women in India is postpartum hemorrhage) laceration of uterus cervix and vagina, rupture of aneurysm of the uterine vessels, and relaxing drugs or anesthetics. Williams² says that the great-

est causative factor in postpartum hemorrhage is partially adherent or retained placenta. No woman should be allowed to lose enough blood to produce symptoms of anemia and shock. If objective or subjective symptoms appear they should be quickly investigated to ascertain whether it is from excessive loss of blood, pulmonary embolism, or extreme exhaustion after a severe labor. If due to hemorrhage the course of the two previous stages of labor will give a cue, whether it is due to atony or partial detachment or laceration. If labor has been prolonged with weak contractions, it is the first or second. If rapid with strong contraction it is likely to be the last. In partial detached or adherent placenta, the cord follows the up and down movement of the uterus, and there are short weak and irregular contractions with cascades of blood intermittently between the contractions; this form of bleeding we also find in the presence of adherent pieces of placenta. When bleeding is accompanied by clotting or retained placenta with contraction of the internal os or lower uterine segment, we have retention of blood in the uterus, or concealed postpartum hemorrhage.

Prophylactic Management.

As soon as the attendant is engaged for the case, or not later than the sixth month, he should take the anamnesis with particular reference to previous labors, their duration and whether complicated by postpartum hemorrhage; if she is a primipara he should get the history of the mother's confinement as to duration and hemorrhage if obtainable. A general examination should be made with special reference to the kidneys and blood. Treatment should be instituted if history or examination shows abnormal kidney blood or other conditions. When history of previous postpartum hemorrhage is obtained, the writer has given tinct. ferri chloridi and tinct. nucis vomicae in the usual doses for two or three months, and fl. ext. of ergot in one minimum dose every two hours when the patient is away, for two weeks preceding confinement, which seems to make the uterine musculature more energetic, during all the stages of labor. The calcium salts may be given for a few hours previous to

¹Playfair's Obstetrics.

²Williams' Obstetrics.

birth if the coagulability of the blood is slow.

When it comes to delivery the obstetrician's armamentarium should contain everything that may be needed in postpartum hemorrhage. The writer's obstetric kit contains a boiler with a thermometer in the lid that registers the degree of heat of the saline solution. The boiler is put on the stove, and the solution sterilized, and kept at 115° till it is evident that it is not needed. This solution is not contaminated as strict orders are given for no one to touch it, and is ready at the proper temperature. Years of experience have proved to me that it is impossible to keep sterile solutions in ordinary vessels where labor is conducted in the home, unless you have a competent nurse to watch them, and even then I have noticed that some nurses have a great proclivity for transferring sterile solutions into imperfectly sterilized containers. A douche bag or can, hypodermic with stimulants and aseptic ergot solution and sterilized gauze with instruments for tamponing the uterus, should be ready if required. The doctor should be prepared to meet all emergencies. In all cases where there is the least indication of a possible hemorrhage, the writer has made it a rule to deliver the ease with the hips on the edge of the bed, the limbs resting on chairs. A large Kelly pad is placed under the hips, as soon as the baby is born and the amniotic fluid has escaped the pad is emptied, and a two liter glass jar is substituted for the waste jar. This glass jar indicates at a glance the amount of blood lost. If urine escapes, as it sometimes does during uterine compression, allowance should be made for this. It is necessary to keep an eye on the amount of blood in the pad, as the writer has proven in vaginal irrigation on a saggy spring bed, that a large pad will hold three liters; this amount of blood would prove fatal and yet the jar would be empty, therefore the pad must be placed on the edge of the bed so that no blood will collect in it, and even on a table this should be guarded against.

Direct management of the postpartum period should begin with the termination of the second stage, by compressing the uterus so that it is in contact with the fetus, so that

no concealed hemorrhage can take place. The uterus should be emptied slowly by letting the uterus expel the hips and limbs. When this is accomplished a light quick effleurage or massage of the fundus and upper half of the uterus should be made, being careful not to massage the lower half, as this produces contraction of the lower half of the uterus, and is conducive to retained or incarcerated placenta, that has to be removed manually with all its attended danger of sepsis. Normally this portion of the uterus does not contain placental site, and hence is not concerned in postpartum hemorrhage, except in placenta previa and laceration. Four c.c. of ergot is now given by mouth; it takes from twenty to thirty minutes to act. When massage has succeeded or failed to produce contraction, the uterus should be compressed by the two-hand Credé method during contraction, and firmly steadied during relaxation, which causes contraction and expulsion of the placenta if not extremely adherent. If the flowing becomes active, the placenta should be quickly removed by the two-hand Credé method.

Obstetric writers advise removal by the single hand Credé method and compression of the uterus by this method in postpartum hemorrhage. The writer has found by experience that an atonic uterus cannot be compressed efficiently by this method, as the thumb alone has to press the anterior surface of the uterus, which measures during the third stage 21 cm. transversely, and somewhat more lengthwise. The writer makes use of both hands, letting the outer edges of the palms compress the cornua and the sides of the upper part of the uterus, where the placenta is naturally situated. The thumbs are applied diagonally inward and downward, spanning the anterior surface of the uterus from side to side. The ovaries are guarded from compression by keeping the two palms of the hands in close contact with the uterus, as they are pushed down on the sides 5 cm. The ovaries are situated along the sides below the upper half and hence are not liable to be crushed. This possibility should however be in the mind of the attendant, because if they should be injured to this extent death would occur through shock. While all

authorities advise keeping up contraction, they do not lay sufficient stress on consistency. You may have a fairly well contracted uterus in concealed postpartum hemorrhage, yet its consistency is boggy, when normally it should have the consistency of a solid tumor. Where there is a partially or completely separated placenta with adherent membranes and contracted inner os with hemorrhage, the blood will be dammed back and collect in the uterus, and distend it. When you see the outline of the uterus through the abdominal wall, you take for granted that you have a contracted uterus, and it feels quite solid, but when you apply compression, you have a deluge of partially clotted blood with the placenta escaping through the vulva enough to prove fatal at once in some instances. This form of concealed postpartum hemorrhage has confronted nearly every obstetrician because writers on obstetrics have not set forth clearly the necessity of estimating size by definite measurement by a practical rule. In these concealed hemorrhage cases, the uterus rapidly increases in size till it reaches a height of 30 cm. above the symphysis, while its normal height is 21 cm. before the placenta is expelled, and 13 cm. after it is delivered, pressed down without force, in a medium sized woman. The rule given by authorities as to size during and after completion of the third stage is that it should not reach above the navel. This is a very uncertain method of estimating its size, as the umbilicus in corpulent women can be found anywhere from the ensiform cartilage to the symphysis, depending on whether the upper part of the body is elevated or depressed. The writer has placed it in different positions between the xiphoid and symphysis to satisfy himself that the navel is not a fixed point in the skin; but on the other hand, the umbilical ring is a fixed point in the abdominal wall, and cannot be displaced. The writer measures the body of the uterus by laying the flat hands across the anterior surface of the uterus, thumb extended at an angle of 90 degrees, tip touching the upper edge of the symphysis, the outer edge of the palm reaching within $2\frac{1}{2}$ cm of the fundus. With the woman lying on a horizontal plane, the normal measurement is 22 cm. before

completion of the third stage. After the expulsion of the placenta the measurement is made with the hand crossed as before, but the thumb is held parallel with the palm, and the length is 13 cm. The transverse measurement is practically the same as the long axis during both stages. The nurse should be instructed how to make this measurement with the hand every two hours during the first twenty-four hours, at longer intervals thereafter, so as to be able to tell whether the uterus is being distended with blood or not. Enlargement means distention with clotted blood, and contraction must be excited by massage and ergot. The shrinkage in size of the uterus is practically one and a half cm. a day, so that at the eighth day it is not felt above the symphysis. Some of the cases that I shall cite illustrate that if the uterus had been measured from time to time with this palm and thumb rule, these concealed hemorrhages would not have taken place to such an extent. When open or concealed postpartum hemorrhage takes place before the placenta is delivered, a hypodermic of ergot should be given into the muscles of the thigh. The uterus should be vigorously massaged and compressed by the two-hand Credé method during its contraction, and steadied when relaxed, so as to prevent further relaxation. If the hemorrhage does not stop quickly, the placenta should be removed manually as soon as possible. In removing the placenta by hand, the accoucheur should be certain that the hand is surgically clean. Anyone who has been confronted with a severe postpartum hemorrhage knows that if he takes the necessary time to sterilize his hands there is great danger that his patient will bleed to death before the placenta is removed. Consequently he must have one of his hands aseptically clean to use in these emergencies. The left is the logical hand, as the placenta is usually situated in the fundus, left cornu, upper part of the left side, and anterior surface. The writer sterilizes his hands previous to the completion of the second stage, and puts a sterile glove on the left hand; before it is put on, the edges of the nails are painted with lysol tinct. of iodine. This glove is not removed unless the placenta has to be removed, when the hand is quickly

washed in 1:100 lysol, or 1:3000 bichloride. With the right hand the rectum and vagina are quickly wiped with gauze and 1:2000 solution of bi-chloride. The writer has never used a gloved hand to remove a placenta, and has never had infection follow such a removal without the gloves; the operator needs all the tactile sense he has in his fingers to be sure that he has not missed pieces or fragments. It is a great comfort to know that everything has been removed, which I don't think one can if he uses gloves. They are so slippery that gauze has to be used in removing small pieces. This jeopardizes the life of the woman to a certain extent, as every time the hand has to be introduced, the chances of infection are multiplied by transferring pathogenic germs from the vulva and vagina to the interior of the uterus.

The writer pleads for one introduction of the hand, and its retention in the uterus till expelled by contraction. Sterile towels on the abdomen, although universally recommended, have no place there, as the operator needs a perfect grasp on the body of the uterus to depress and compress it during manual removal of the placenta. If the concealed or open hemorrhage does not stop with compression between the hands, one inside and one outside, the uterus should be massaged energetically at the sides and lower segments, care being taken that the ovaries are not injured, by keeping the fingers in contact with the body of the uterus, as has been suggested. This usually produces contraction, which expels the hand from the uterus.

If it is impossible to check the hemorrhage, the aorta should be compressed by the edge of the hand which compresses the fundus. This stops any hemorrhage no matter how severe. A hot saline douche of 120°F. should be given to excite contraction and lessen the chances of infection. If there is a tendency to recurrence of hemorrhage the uterus should be packed by a strip of gauze one-half yard wide and 9 ft. long, under the most rigid aseptic precautions. Here rubber gloves are a necessity. In tamponing the uterus, it should be forced down by an assistant till the os appears at the vulva. A strip

of moistened gauze should surround the cervix and cover the vulva, so as to guard against infection as much as possible. The relaxed soft cervix is held open by covered forceps with rubber or gauze; a vulsellum is apt to tear it.

A gauze packer two cm. in diameter is better to pack with than forceps, as the gauze comes in contact with no surface except the uterus. It should be left in place from 8 to 24 hours. If symptoms of severe loss of blood are present one may resort to auto-infusion, by lowering the head 45 degrees and bandaging the extremities; to stimulants, saline solution, by percutaneous or intravenous injection of 250 to 500 c.c.; to transfusion, from a relative if possible, by the two-piece transfusion canula with retaining clamp, which has proved satisfactory in Bernheim's hands. If possible, no woman should be allowed to die from loss of blood without resorting to this effectual means of saving life.

Case One—Mrs. E. B. Second labor. Age 26, concealed postpartum hemorrhage caused by ether anesthesia and partially detached placenta. This case illustrates that the size of the uterus should be noted from the completion of the second stage till permanent contraction after the third stage.

When I was engaged to attend her, she asked to have the labor made as painless as possible, to which I agreed, as it has been my custom to keep the patient fairly comfortable with ether during the second stage; though I have always noted that the babies are somewhat cyanosed and that there is a tendency to excessive flow. The labor was of short duration; the uterus was massaged till it contracted; attention turned to the baby which was cyanosed; and the mother watched carefully with a view to possible hemorrhage. The thick abdominal wall obscured the size of the uterus, and no blood escaped through the vulva. The patient suddenly turned pale. The uterus was grasped and compressed by the two-hand Credé method, and about two liters of blood was expelled with the placenta.

I was fortunate in having as assistant a competent nurse who held the uterus tetanically contracted by the two-hand

method, while I gave autotransfusion with saline subcutaneously, and 250 c. c. intravenously.

Stimulants were given, and four hours of constant work. Recovery resulted and the patient was up on the tenth day.

Case Two.—Mrs. H. Age 30. Third labor. This case illustrates that chloroform is an etiologic factor in postpartum hemorrhage.

Chloroform was administered by drops for a few minutes while the head was distending the perineum. It was handed to the husband with instructions to drop two drops at a time a few seconds before completion of the second stage. He must have saturated the mask, as the patient stopped breathing for a second or two, when he was instructed to remove the mask. When the baby was born an attempt was made to massage the uterus; it was found as limp as a wet rag, and in a few seconds a stream of blood an inch in diameter gushed through the vulva. The surgically clean ungloved hand was quickly introduced, the partially adherent placenta removed, and the hand retained in the uterus till expelled by contraction.

In the meantime the edge of the outer compressing hand compressed the aorta, and the inside hand compressed the placental aspect. There was no excessive blood loss. That the chloroform was responsible for the flow is evident, because in her former labor the patient had had no hemorrhage, although cared for by an old quack that had never attended a medical school.

Case Three.—Mrs. J. Fourth labor. Illustrates that nervous shock is an etiologic factor in postpartum hemorrhage.

Patient anemic and nervous. Had passed through labor and first day of puerperium without hemorrhage. On the second day, a bolt of lightning struck and fired a stable close to the house; she fainted and flowed till she died without regaining consciousness. The history of the case was given me by the husband.

Case Four.—Mrs. J. B. Eighth labor. This illustrates that compression of the aorta is an effectual method for control of severe postpartum hemorrhage.

The patient gave a history of flowing in

all her confinements. She was now weaker than formerly, from more or less continuous vomiting during pregnancy. The writer had no opportunity to treat her prophylactically. Bleeding began before completion of the second stage; everything was prepared in the way of sterilization and for extraction with forceps.

Ergot by mouth and hypodermic, hand quickly introduced to remove placenta, and hand not removed from the uterus for an hour; massage and compression did not control bleeding, only compression of the aorta would check it temporarily. This was kept up at intervals for two hours. Uterus packed and packing removed in eight hours. Puerperium normal except some temperature. Up in two weeks.

Case Five.—Mrs. C. D. Age 34. Fifth labor. Illustrates the benefit of prophylactic treatment as described, with abundant nourishment.

Had postpartum hemorrhage in all her previous labors. When delivered, precautions taken against loss of blood as outlined. No abnormal loss.

Case Six.—Fourth labor. Age 32. Illustrates also prophylactic treatment and preparedness for postpartum hemorrhage. Patient nearly flowed to death in her previous confinement, according to her statement. Prophylactic treatment and all precautions taken against hemorrhage. Loss probably 750 cc. In her next confinement removed to her previous place of residence. Was attended by her former obstetrician, who tamponed in front of placenta and lost her.

Case Seven.—**Seventh labor.** Mrs. H. M. Age 36. Delayed postpartum hemorrhage. Illustrates the danger of not instructing the nurses to measure uterus during puerperium, so as to keep it massaged down to prevent clots of blood collecting in it. Patient had an easy labor. No ergot given. Attendant left inside of an hour. No instruction given to nurse as to size of uterus.

Four hours after labor the patient said to the nurse: "It is getting dark, I feel like fainting." The nurse examined the uterus; found it enormously distended, and massaged and compressed it, which caused expulsion of a clot that measured two liters.

The writer was called in the emergency. Under the usual treatment the patient, whose physique and health were splendid, was up on the twelfth day.

Case Eight.—Mrs. H. J. Fourth labor. Age 32. Illustrates the necessity of keeping track of state of uterus during third stage. Died from concealed postpartum hemorrhage under the care of a midwife with fifty years' experience, because no attention was given during third stage. Midwife furnished history.

Case Nine.—Also illustrates the necessity of keeping the woman under close observation till the third stage is completed and the womb has contracted to its proper size. A late colleague and friend of mine was in another room idling away the universally recommended half to three-quarters of an hour that she had expired.

Academy of Medicine Building.

DISCUSSION.

Clarence B. Ingraham, Denver: Fortunately, nowadays we see very few fatal hemorrhages. They occur about 1 in 2,000 to 2,500 cases. As a preventive of post-partum hemorrhage a correct conduct of the third stage of labor is most important. If we wait until the placenta is separated from the uterus before we try to express it, we very seldom see a severe hemorrhage. After the placenta is separated from the uterus the fundus rises, so that it is a few fingers breadth above the umbilicus, meaning that the placenta is occupying the lower uterine segment. In the third stage of labor, after the placenta has been delivered, the fundus should be watched for a certain time. I have noticed in the different hospitals that after a woman is about to go back to bed she is left alone. In the eastern hospitals, or in Baltimore, where I had my training, it was the rule for the nurse to stay by the patient for an hour and watch the fundus, and to see that it was kept hard. If we are going to have a severe hemorrhage it will almost always occur within that length of time.

This last winter I was called out to the obstetrical department of the County Hospital by the interne to see a case of post-partum hemorrhage which he was trying to deal with—a continued, slow bleeding. Putting my hand on the fundus I found the uterus distended and full of blood. This woman had had a concealed hemorrhage with slight external bleeding. After pressing out the clots and kneading the uterus for a short time there was no more bleeding. Watching the fundus of this woman immediately after labor would have prevented that particular hemorrhage.

Of the different causes for hemorrhage, probably one of the most important is the retention of pieces of placenta or membrane; next probably atony of the uterus, which, however, Veit claims is practically never the cause. We sometimes see it after distension.

Another common cause is a tear somewhere in the generative tract. Blood diseases also are infrequent causes. Atony of the uterus is the one

we most fear. We recognize this by a steady, profuse flow of blood, not coming in spurts as it does with tears or with retained pieces of placenta; and on palpation the uterus is soft and flabby. Such a hemorrhage is the hardest to deal with and most rapidly fatal. I recall a case when I was an interne at the Hopkins. Some outside doctor had delivered this woman, and within fifteen minutes after the baby was born and the placenta delivered the woman had died. The body was brought to the hospital for autopsy, because the family claimed that the doctor had left something behind, and that death was due to improper care. The uterus was opened, but there was nothing inside; it was simply a case of atony of the uterus.

As regards treatment, not expressing the placenta too soon, and watching the fundus after the placenta has been expressed, are most important. We have drugs, such as ergot, and in cases of atony of the uterus pituitary extract is of value. It is probably not so valuable an adjunct in stopping hemorrhage as ergot. Another measure to control hemorrhage is to pack the uterus, and what we seldom see used here in this country, but something that is most efficacious, is the Mombert belt, placed around the abdomen above the fundus, compressing the aorta. Such treatment will stop hemorrhage completely. There have, however, been some fatalities which have been attributed to the belt—gangrene of the intestines or injuries to the viscera—and we know ease or in renal disease.

A. McGugan, Denver: I want to mention a case in which we had to use median forceps. We had retained membrane, about one-quarter the amount, that it should not be used in cases of heart disease and post-partum hemorrhage. I think all of you, as I, were taught to remove retained membranes. Dr. De Lee of the Northwestern University Medical School of Chicago advocates non-interference even to the extent of retained membranes, and with fear and trembling in this case post-partum, after forceps delivery, I decided not to interfere and left the membrane in. We gave the woman a few minims of pituitrin—I think five to seven minims; we gave her a dram of ergot immediately, another one two hours afterwards, and fifteen drops each of fluid extract of ergot and hydrastis every four hours the next day. After the first twenty-four hours we put her on a back rest; she had some elevation of temperature, but much to my relief, the case cleared up beautifully.

John Lindahl (closing): We have a way of controlling post-partum hemorrhage by compressing the abdominal aorta by the Mombert belt as suggested by Dr. Ingraham. The aorta can be effectively compressed with the hand or fingers. A very satisfactory way to compress it is by the outer edge of the hand at an angle of 45 degrees, which at the same time compresses and massages the relaxed bleeding uterus, with the other hand compressing the placental site, and stimulating the uterus to contraction by extending and contracting the fingers. In some of my severer cases this method has been followed: Compressing at this angle the pressure is applied to the aorta and the left side of the spine; when the angle is reversed the vena cava and the right side of the spine are pressed on, and a gush of blood through the vulva demonstrates that the pressure on the aorta has been removed. This method of controlling hemorrhage in these cases is practically infallible and can be continued for hours without injury to the vessel if the pressure is shifted from one point to another, to avoid trauma by long-continued pressure at one place.

SOME DIFFICULTIES IN THE EARLY DIAGNOSIS OF TABES DORSALIS.

PHILIP WORK, M. D., PUEBLO.

In the course of a statistical study made some time ago, it was noted that tabes in the early or so-called "pre-ataxie" stage was very seldom diagnosed as such.

It is with the view of aiding the diagnosis of a larger percentage of such cases that the following study of the subjective symptoms, initially presenting, is submitted, that is, those symptoms which in each case prompted the patient to consult a physician. In cases presenting two or more initial symptoms, that symptom has been counted which gave the patient the more acute discomfort.

It is futile to try to erect a scheme of diagnosis upon so small a series, but it is hoped that analysis of this series will promote earlier recognition of this disease.

This report is based upon 150 cases, 128 men and 22 women, in whom the clinical diagnosis of tabes dorsalis had been made; of these 75 came from the neurologic wards of the Philadelphia General Hospital and 75 from the practice of various neurologists. In many cases no serologic work had been done, in others the results were so conflicting that they have here been disregarded.

A chart is appended showing the percentage of incidence of each subjective symptom and the percentage of cases in which that symptom appeared at a later date.

Symptom.	Initial.....	% of Total.....	Later symp.....	% of Total.....	Total Incidence.	% of Total.....
Lancinating pains in legs	70	46 $\frac{2}{3}$	41	27 $\frac{1}{3}$	111	74
Numbness	26	17 $\frac{1}{3}$	5	3 $\frac{1}{3}$	31	20 $\frac{2}{3}$
Gastric crises	9	6	11	7 $\frac{1}{3}$	20	13 $\frac{1}{3}$
Renal crises	2	1 $\frac{1}{3}$	..	..	2	1 $\frac{1}{3}$
Bladder crises	2	1 $\frac{1}{3}$	4	2 $\frac{2}{3}$	6	4
Chest crises	1	$\frac{2}{3}$	2	1 $\frac{1}{3}$	3	2
Laryngeal crises ...	1	$\frac{2}{3}$	..	..	1	$\frac{2}{3}$
Incontinence	3	2	11	7 $\frac{1}{3}$	14	9 $\frac{1}{3}$
Dysuria	3	2	4	2 $\frac{2}{3}$	7	4 $\frac{2}{3}$
Girdle sense	6	4	12	8	18	12
Shoulder pain	2	1 $\frac{1}{3}$	..	..	2	1 $\frac{1}{3}$

Abdominal pain	3	2	4	2 $\frac{2}{3}$	7	4 $\frac{2}{3}$
Backache	2	1 $\frac{1}{3}$	1	$\frac{2}{3}$	3	2
Amaurosis	6	4	8	5 $\frac{1}{3}$	14	9 $\frac{1}{3}$
Diplopia	4	2 $\frac{2}{3}$	5	3 $\frac{1}{3}$	9	6
Leg ataxia	10	6 $\frac{2}{3}$	15	10	25	16 $\frac{2}{3}$

A thorough and complete physical examination should disclose a great majority of early tabeties, for this series indicates that the patient very seldom complains of subjective symptoms for any length of time without having some demonstrable objective symptom. A good history is essential, but to get such a history the examiner must know how to question, and must expect to learn on the second or third questioning many things categorically denied at first. Further the examiner must remember that not every nervous disease in a syphilitic is of luetic origin.

In the time at my disposal it is manifestly impossible to discuss all the subjective symptoms that may initiate the symptom complex, but I shall endeavor to make the differential diagnosis of those symptoms first arising in the majority of cases.

Seventy cases, or 46 per cent, suffered first from lancinating pains in the legs, 27 per cent had them later; 45 of these 70 were treated for varying lengths of time for muscular rheumatism. Given a patient with no other symptoms the differentiation from myalgia must be made. The principal diagnostic point seems to be that during a tabetic paroxysm there is commonly cutaneous hypersusceptibility to touch and to pain, whereas in myalgia pressure usually gives relief. The pain in tabes is more apt to follow a single nerve, like a red-hot wire, but it may not always be the same nerve even during a single attack. Myalgia always follows exposure, tabetic pains may or may not, though there is a tendency for the attacks to be grouped following excesses or exposure. Myalgia is almost always febrile, tabetic pain practically never. These patients without exception characterized the pain as sharp, jabbing, needle-like or red-hot, or as liquid fire. It is worthy of note in this connection that those pains may equally well occur in any other part of the body, the testicle and the distribution of the fifth nerve being favorite sites. When these lancinating pains occur in the viscera they are termed crises,

* Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

but nomenclature is largely a matter of location.

In 26 cases or 17 per cent of the total, the initial symptom was "a numb feeling in the legs". The forms of paresthesia are legion: "ants erawling over the feet," "feet falling asleep", "feet being dead", were all complained of. The patients in whom the sensory disturbance in the lower extremities was most marked tired more easily than those complaining of any other symptom. With the numbness comes analgesia. The pain sense is gone, or practically so, while the tactile sensibility remains relatively undisturbed. The patient feels that he has been pricked but has no pain therewith. Oppenheim cites the case of a man who pinned the bedclothes to a fold of skin on his thigh and discovered it only by accident some hours later. This hypesthesia can be limited to a definite radicular distribution, and almost without exception even in the very early cases a zonular area definitely referable to certain spinal roots can be made out on the trunk, or even on the neck and head.

The different somatic manifestations of tabes are, as is well known, due to degeneration in the sensory conduction tract, the primary focus being either in the posterior columns or the spinal ganglia. Early ganglionic changes are, however, constantly demonstrable. The distribution of the somatic signs is directly dependent upon the location of the foci of degeneration. With this in mind it is easy to see why one case may have only gastric crises, another bladder symptoms, and still another only paresthesias.

Of these 150 cases, 10 or 15 per cent had various visceral crises, nine being of the stomach, two renal, two bladder, one laryngeal and one chest. The literature of tabes is replete with accounts of laparotomies done for acute abdominal pain, in which nothing was found to account for the symptoms, which as a rule remained away long enough to permit of an operative recovery. This series is no exception, for of the nine cases with gastric crises three had been treated for gastric or duodenal ulcer, two for pylorospasm, and five had been operated on. A composite history of those cases giving gastric crises

as the first symptom is that the first attack trauma. One patient noted that a "morning followed some dietetic indiscretion, shock or after" spell of emesis lasted unduly long and was associated with an unusual amount of pain. By afternoon this attack assumed the form of a typical gastric crisis. Another case developed his initial gastric attack while convalescing from a fracture which incidentally required a year before return to usefulness.

One man with a renal crisis first arising while on a fishing trip, escaped operation for calculus solely because he refused point-blank to be disturbed enough to be transported fifteen miles to a hospital. When this man returned to the city two weeks later he showed Argyll Robertson pupils, absent knee jerks, and a hypesthetic band in the area of the ninth to twelfth roots.

Both the men with bladder crises had been told that they had stone in the bladder and that removal of the stone would cure them. Having no money and no knowledge of free clinics they went uninterruptedly the course of tabes. The six patients with failing vision, four with diplopia and ten with ataxia, were all correctly diagnosed by the first medical man consulted.

Of the three cases with dysuria as the presenting symptom, each had been told that his prostate was enlarged, although only two had any local examination. One man had his prostate removed, in the face of a clear history that at times he urinated without trouble, and the operation findings note that the removed gland was normal in appearance and size. As to what the ultimate result of this operation might have been we cannot say, for the patient died of anuria, on the seventh day, but not before he had had another typical tabetic perineal crisis.

Without going further into tiresome detail, these cases suffice to show that the mistakes made in the interpretation of the various tabetic manifestations are almost without exception due to insufficient study, to careless examination if you will, to symptomatic prescribing and to the feeling that whatever is the matter an "exploratory" will show the cause.

My contention is that careful study and

systematic examination of the patient with proper attention to the various laboratory procedures, will in great measure discover the tabetic and save him from symptomatic treatment, from meddlesome surgery, and last but not least from much suffering.

This brings me to the final point in diagnosis, the laboratory. Only too often the patient is falsely branded syphilitic, or being infected is told that he "never had it", and that his trouble is due to something else; that "something else" not being named, although a proper appreciation of the status of the serologic processes might clear the diagnosis. In neurologic medicine a positive finding is indicative, a negative means nothing. Positive serologic findings are confirmatory, nothing more.

The great source of error in the Wassermann reaction is that the practitioner regards it as conclusive and believes that the blood-serum test is the only one. All that Kaplan can say of the test, in *tabes*, is that it is more often positive than negative. Moreover he says: "In by far the greater number of cases of *tabes* the cerebrospinal fluid gives a negative Wassermann reaction. The proof of the infection, if there is assumed to be a definite proof, lies in the pleocytosis, not in the reactions."

Kaplan further says: "Surprises are in store for the physician who performs rachicentesis on all neurologic cases as a routine procedure."

In conclusion, I believe that in the majority of cases *tabes* may be diagnosed in the early stages if the patient is carefully and thoughtfully examined, a good history taken and serologic work done carefully; better if the serologic test is checked by several workers, and then taken at its real worth, as a confirmatory test. If this procedure be carried out as a routine the physician will treat fewer cases of atypical "stomach trouble" and much less rheumatism, and, it must also be said, the surgeon will do fewer "exploratories".

DISCUSSION.

Edward Delehanty, Denver: I think Dr. Work is to be commended upon his analysis of 150 cases of locomotor ataxia. It is an enormous job to make an analysis of so many cases.

Dr. Work spoke of the importance of the early

symptoms of locomotor ataxia. I do not think there is anything in medicine that is more essential than a knowledge of the early symptoms of locomotor ataxia—at least, the three cardinal symptoms of the disease—the lancinating pains, the Argyll Robertson pupil, and the absence of knee jerks. These are in the great majority of cases present from the beginning and continue throughout the course of the disease, and are with the patient for life.

The mistaken diagnoses in my experience are more with rheumatism and with multiple neuritis. The doctor has spoken about the rheumatic cases and of the number of mistakes made in cases that were diagnosed as muscular rheumatism. This, of course, is either due to gross negligence or to ignorance; but as for multiple neuritis, there are some cases in which it is practically impossible or almost so to make a differential diagnosis. Recently a young man, twenty-four years of age, in the course of a few weeks became decidedly ataxic. He had paralysis of the feet; he had paralysis of one of the extrinsic muscles of the eye, and he had a certain amount of disturbance of the bladder, practically all the cardinal symptoms of locomotor ataxia. A diagnosis of acute locomotor ataxia was made. You can imagine the panic which was created in the family on account of the prognosis of the disease.

A very important element in the diagnosis of locomotor ataxia is forgotten, and that is its chronicity. Here all the symptoms practically were present, and this young man in the course of a few weeks became markedly ataxic. A careful study of the previous history of the young man proved he had had a sore throat some six weeks prior to the development of the ataxia, and although it was not sufficiently severe for him to consult the family physician, yet there was positive evidence to my mind that the man had had diphtheria, and was suffering at the time I saw him from post-diphtheric neuritis.

We cannot emphasize too much the importance of the early symptoms of the disease. If we were to make a routine matter of examining these cases more frequently than we do for the Argyll Robertson pupil and absence of knee jerks, I am sure fewer cases of Charcot's joint would be operated upon for tuberculosis, and fewer laparotomies performed for gastric crises.

G. A. Moleen, Denver: As has been said, there is no disease in which so many errors have been made, and, as Strümpell puts it, there is hardly a disease in the whole category of medicine which has such a multiplicity and wide variation of symptomatic manifestations.

One point I wish to bring out, which I think the last speaker intended to bring out, is the presence of static ataxia in those patients who evidence pain in the lower extremities. There is a seeming predilection for lumbar enlargement of the cord and this is preceded by a hyperplasia of the posterior roots. These patients therefore complain promptly of lancinating pains in the lower extremities, these pains being associated with some vesical disturbance, most often a slight period of retention, followed by dribbling. To guard against making a false diagnosis of sciatica or of rheumatism, it is always well to carefully test the knee jerks as a routine and also to be on the lookout for static ataxia. The station of the individual should be tested with the eyes open and also when they are closed, and then again opened in order to satisfy the observer fully as to whether he is dealing with inability to maintain oneself in the absence of ocular assistance. Under these circum-

stances you can readily determine whether the nerves leading from the lumbar enlargement are really involved, as will be the case in the majority of instances of locomotor ataxia. In those cases which present abdominal pain it is advisable to test the trunk of the body for hyperesthetic areas or for anesthetic areas, and in those cases in which the upper portions of the cord are involved we are more likely to find the Argyll Robertson pupil, because that phenomenon results from an involvement of the cilio-spinal center in the cervical cord rather than of those regions which are only associated with structures lower down. It would not be conclusive to say the case was not locomotor ataxia in the presence of lancinating pains and instability of station if the iris reflex to light were not absent, for if the disease is limited to the lower part of the cord we may have present the iridic reflex to light. If you compare the iris reflex to light with the rapidity of response to convergence or accommodation you will find that the former is sluggish in comparison with the latter.

Philip Work, Pueblo (closing): The symptoms presented by this group of cases were much too numerous to admit of consideration of the entire group in one paper and it was therefore thought advisable to present only the most common subjective or presenting symptoms. Practically one hundred of these patients were seen personally for the purpose of obtaining these data, and the other fifty histories were obtained from consecutive hospital case histories.

GAS OXYGEN ANESTHESIA AND ITS LIMITATIONS.

JOHN W. SEYBOLD, D. D. S., DENVER.

All anesthetics have their limitations, some more than others. While gas-oxygen is the safest, it is also the most difficult to administer; few being able to produce relaxation with it. We may, therefore, at times see some very discouraging results, and on first thought blame the anesthetic when, in reality, it is the faulty technique of the anesthetist that is to blame.

The doctor in charge of the anesthetic may have great skill with chloroform and ether and yet make a positive failure in this form of anesthesia. One who has not had experience with gas-oxygen is just as much a novice, regardless of his experience with other anesthetics, as the young intern with his first case; in fact, his chance of losing the patient is greater. This is due to the fact that the danger symptoms with this anesthetic are so different from those we see from the other anesthetics.

Gas-oxygen cannot be considered safe except in the hands of one skilled in its use. In the hands of an expert nitrous oxide and oxygen anesthetist, however, there are very

few contraindications to its employment. These contraindications are vitally important. They include:

1. Patients suffering from swellings in the throat such as we find in the advanced stages of Ludwig's angina.

2. Cases of extremely high blood pressure in which the operative procedure will necessitate using the Trendelenburg position.

3. Poorly nourished children under five years of age whose air way is blocked with enlarged tonsils and adenoids.

In the first case, an edema of the glottis may develop and the patient choke to death. In the second, that of the patient whose blood pressure is very high and who is placed in the Trendelenburg position, there is danger of rupturing a blood vessel within the brain, especially if the anesthetic technique be a little faulty and the blood pressure allowed to rise. The third case is a bad risk, from the fact that children under five years react very rapidly under this anesthetic. In a child having a low resistance and whose air way is blocked, it is practically impossible to maintain an even anesthesia. Should the patient get a toxic dose and go into clonic spasms or for any reason stop breathing, the lowered resistance makes it very hard to resuscitate him.

The cases just described are such as I have had to handle, and have proved to be the most difficult, having required "hair-line anesthesia", if I may use that term. To me the experience was like steering a high-powered racing machine down a very narrow lane where the slightest mistake meant death.

There are some who claim that this anesthetic cannot be used in abdominal work. This idea is due to the critic having seen bad cases in which the technique of the anesthetist was at fault.

I have successfully handled cases for a number of well-known surgeons and have found but one case that I had to abandon on account of the anesthetic. This was due to my using apparatus that was imperfect. The patient was extremely difficult to handle, having been on morphine for a long time. He had an acute abdominal trouble, and I could not get relaxation until I had para-

lyzed the respiratory center. I asked that the patient be given ether by mask, and by a good etherizer. This was done immediately, the patient not being allowed to recover consciousness, and at no time during the operation could the patient be relaxed with the ether.

We have all seen cases that could not be relaxed perfectly, no matter what anesthetic was used, and for this reason I do not feel that the percentage of failures with nitrous oxide will be greater than I first anticipated or even so great.

As surgery is done today, I think we are safe in saying that seventy-five per cent of post-operative deaths are due to the after-effects of anesthesia. It has been pointed out by some of our prominent investigators that a half-hour's anesthesia with ether or chloroform, using an amount just sufficient to get surgical relaxation, requires from ten days to two weeks for complete elimination of the drug from the system. This being so, let us see how this great percentage of post-operative deaths from anesthesia is brought about. Suppose, for instance, that the surgeon is a rapid, rough operator and demands deep relaxation for his work. The rougher he is, the more anesthetic it requires to keep the patient quiet and maintain relaxation. When we get this deep relaxation we also get an anemia of the brain due to the great amount of blood held in the splanchnic area. This results in anesthetic shock, and at times these patients require from one to two years to fully regain their health and take up their work as they should. These patients are dreadfully handicapped, for their resistance and strength have been used to throw off the ether or chloroform, and to sustain them during the time when they could not get water and nourishment. By using sharp dissection and gentle manipulation of tissues, the surgeon can do the operation just as well and with less anesthetic, at the same time promoting the post-operative comfort of the patient.

We have no post-operative effects from gas-oxygen, and we can give our patients all the water and nourishment they want so far as the anesthetic is concerned. This enables them to use their strength to overcome

the surgical after-effects, and at the same time to take nourishment earlier.

The method we use to lessen the amount of anesthetic necessary for abdominal work is Crile's anoci-association, or infiltrating the tissues with 0.25 per cent. novocain solution. This is used as a block to prevent impulses reaching the brain.

Before going farther, I want to cite an experiment I made along this line in my practice as an oral surgeon.

The patient was a lady thirty-five years of age who was referred to me for the removal of impacted wisdom teeth, one on each side in the lower jaw. These teeth were set at right angles to the other teeth. One was entirely covered by bone of the ramus. The other was not so bad, part of the crown being visible. I thought this would be an excellent occasion to test out double-anesthesia, as I had a patient requiring the same operation on both sides. These operations are very severe and require deep anesthesia, and often take as much time as a laparotomy.

I put the patient under gas-oxygen anesthesia, and then selected the most difficult side to block, and injected with novocain the inferior dental nerve as it enters the mandible on the inside of the ramus. This blocked that side up to the median line. The other side I did not block. I removed both teeth at the same sitting and without stopping the gas-oxygen anesthesia. When the patient returned to consciousness, which was in about two minutes, she immediately complained of pain on the side that I had operated on without injecting, but said that the side which I had blocked was comfortable. Yet this tooth was the one that had required almost twice as much time to remove. There was practically no pain for hours on the side that had been blocked, and when the patient returned for treatment on the following day this side was not nearly so sore as the other. It also healed faster and required less treatment.

This seems to me to give conclusive evidence of the advantages of double anesthesia, and that it should be used on all cases of close surgical risk, and for that matter all abdominal operations, as by so doing less

anesthetic is needed, acidosis is reduced and post-operative comfort is promoted.

I have only been able to get surgeons to use this technique in very few cases, and these were moribund, and such as we did not think could live more than a few hours. Yet these patients lived; in fact they seemed to come off the table in better condition than they went on.

It requires but a very few minutes to use blocking. And by sharp dissection and gentle handling of the tissues in conjunction with gas-oxygen anesthesia, I am sure that it will be possible to pull many a close risk through safely; such, often, as we have seen die heretofore.

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RECORDS OF THE PLAGUE*

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Man has never been the pampered child of nature, but has fought a continual struggle with every living and inanimate force around him. It is true that he has sometimes been his own worst enemy. War has wiped great tribes from the face of the earth. Concerning Southern Africa it is suggested that a once teeming population has almost disappeared as the result of tribal struggles whose bitterness resembled the duel of the famous Kilkenny cats. But the powers outside man have played an even greater part in developing his strength and discovering his weakness. Exposure and starvation have slain their thousands. But the greatest foe of all has been that unseen mischief-maker, the pathogenic microorganism.

In this century we are apt to regard as our greatest enemy among the germs that insidious one which, always present in every community, year after year sends thousands of human beings to their grave. But the ravages of tubercle are not spectacular. In other times and among other peoples another bacterial scourge has again and again descended with a destruction almost as swift and deadly as that with which a cloud of locusts visits the crops of the helpless farmer.

*Read before the Medical Historical Club of Denver, Colorado.

The Litany of the Episcopal Church prays for deliverance from lightning and tempest; from plague, pestilence, and famine; from battle and murder, and from sudden death. But the greatest of these, in the days when the prayer book first replaced the Catholic mass, was the plague or pestilence.

The march of the plague has always had something in it which appealed to the popular imagination, for no other ailment more fitly embodies the psalmist's comparison of man with the grass, which in the morning flourisheth and groweth up, and in the evening is cut down and withereth.

It would be interesting if some student of history were to analyse the effect which great epidemics have had upon economic and political conditions. We know that in many wars more deaths occur from disease than from the wounds of battle. But who shall estimate the overthrow of governments, the successful movements of population, and the changes of social rank and position, which have followed such catastrophes as the Black Death of the middle ages? The final decay of the feudal system was in part due to the ravages of disease, which made the laboring man more valuable by diminishing the supply of him.

The great plague reported by Livy is said to have carried off in Africa one million persons. The heathen Turk at Constantinople has been accountable for many a sudden death; but his villainy surely never excelled that of the pestilence which is said, in 543 A. D., to have destroyed ten thousand lives in a single day. Not all the wars of the middle ages taken together can have slain so many as the Black Death, in which according to Hecker one-fourth of the population of Europe, or the enormous number of twenty-five millions of people, suffered extinction.

At the middle of the sixteenth century, a fifth of a million persons died of the plague in Moscow and its vicinity. In the same epidemic the French city of Lyons lost 50,000 inhabitants. At the beginning of the seventeenth century, an outbreak of the plague which lasted for eight years in London, is said to have been responsible in Egypt for one million deaths in the course of a single year. In 1656 the disease raged with such extreme

violence in the city of Naples as to carry off 300,000 within five months. In 1665, the year of the "great plague", the population of London was 460,000. Of these two-thirds were reputed to have fled the city to escape the disease. Yet in a few months, the total number of deaths from plague, as stated by the bills of mortality, was 68,000. Equally or more terrible figures might be given regarding Stockholm in 1710, Marseilles in 1720, and Moscow again in 1770.

Like many other infectious diseases, the plague has probably existed since civilization began. The fact that it is often referred to as oriental plague points to the old belief that its normal home was on the continent of Asia. One of the oldest references is that contained in the biblical story of the Israelitish wanderings in the wilderness. "Now they that died of the plague were fourteen thousand and seven hundred". The epidemic described in Livy's imaginative history of Rome is said to have arisen in Northern Africa. According to Thucydides, the famous plague at Athens began south of Egypt in Ethiopia; thence descending into Egypt and Lybia and, after spreading over the greater part of the Persian empire, suddenly falling upon Athens.

The language in which Boccaccio, in the introduction to his *Decameron*, accounts for the arrival of the plague in Florence, is a picturesque example of his quaint Latin Italian. Literally translated: "I say then, that already were the years of the fruitful incarnation of the son of God to the number arrived of one thousand three hundred and forty eight, when in the famous city of Florence, beyond every other Italian city most beautiful, arrived the deadly pestilence, which through the act of higher beings, or through our evil works, by the just wrath of God for our correction sent upon mortals, some years earlier in oriental parts begun, these of an innumerable quantity of living beings having deprived, without cessation, from one place to another progressing, towards the occident unhappily extended".

Defoe's *Journal* traces the great London plague from Holland, "whither they say it was brought, some said from Italy, others from the Levant, among some goods which were brought home by their Turkey fleet".

It is only in somewhat recent years that the diagnosis between the various infectious diseases has emerged from the chaos which formerly enveloped it. It is rather a certainty than a possibility that in ancient times the word "plague" included other diseases besides the one for which we now employ it. The uncertainty as to the exact nature of the various epidemics of history is increased by the fact that several predominating groups of symptoms may result from a like bacterial infection. Thus we have bubonic, pneumonic, and septicemic forms of the plague, all produced by the bacillus of Kitasato.

The word "plague" carries with it no definite symptom idea, such as comes to us for example when we speak of yellow fever. It is from the Latin "plaga", a blow, stroke, or stripe, thus implying that a plague is a blow divinely inflicted, and presumably because of sin.

The Black Death is usually considered as having been an outbreak of the plague proper. But there are writers who consider that the series of epidemics included under this title may in part have consisted of malignant small pox. Some writers quoted by Sprengel describe the well-marked plague of the sixth century in Europe as having been complicated by smallpox. One of the victims of this outbreak was Austrigilda, Queen of Burgundy, who achieved everlasting renown by requiring her husband to execute all her physicians as soon as she had yielded up her last breath. The gentleman was faithful to his promise.

With doubtful authority Joseph F. Payne rejects from the list of epidemics of true plague the one in Athens described by Thucydides, and the later one in Rome in the time of Marcus Aurelius, which is said to have carried off 5,000 persons in a single day. An excellent example of the old confusion of nomenclature may be found in this country and not far from our own time; for an old account of the outbreak of yellow fever in Philadelphia in 1793 has appendices concerning the plague of London in 1665 and that of Marseilles in 1720; and seems to regard the yellow fever as a form of the plague.

The writings on the plague are embarrassing in their profusion. I have already spoken

of Thucydides, whose account of the plague at Athens is contained in his history of the Peloponnesian war; of Boccaccio, who as an eye witness describes the plague at Florence, and makes it the peg on which to hang his famous series of tales, the Decameron; and of Defoe, whose *Journal of the Plague* is one of the classics of English literature. Manzoni, perhaps the only really great novelist that Italy has produced, gives in his *Promessi Sposi* an entertaining account of the plague at Milan in the first half of the seventeenth century. Thucydides was himself a sufferer from the disease. Defoe was only three or four years old at the time of the London plague, but obtained authentic material from a study of writings by eye witnesses and of public documents. Pepys' diary contains numerous references to the London plague. A little work by Jan van Beverwyck, entitled *Idea Medicinæ Veterum*, which is in our Denver medical library, contains seventeen and a half pages, chiefly in Latin and a few in Greek, of quotations regarding the plague from as many as fifty-five different writers of antiquity. Among these are Sophocles, Homer, Ovid, Lucretius, Hippocrates, Livy, Seneca, Virgil, Plutarch, Cicero, Plato, Pliny, Herodotus, Caesar, Horace, Aristotle and Galen.

A short article in the *Semaine médicale* for 1899 is accompanied by six reproductions of paintings of the plague. The first of these is a picture by Parmigiano (1504 to 1540) of St. Roch. The gentleman has one knee on the ground, his eyes are lifted towards the sky, and one thigh is uncovered to show a plague carbuncle. The second picture, by Tintoretto, shows a number of plague sufferers. The third, by Pierre Mignard (1610 to 1695) is entitled *The Plague in Judæa*. It represents the plague which was inflicted on the nation because of David's attempt to number the people, and beneath it are quoted David's words to Jehovah: "What has this people done, Lord? It is I that have sinned. Turn, I pray thee, thy hand against me only". In the foreground of the painting a physician is himself dying of the plague just as he has lanced a bubo in the armpit of a plague-stricken woman. The fourth plate is after a painting by Nicolas Poussin, and is

entitled "The Philistines Stricken by the Plague". The subscription reads "The ark of the Lord having been taken by the Philistines, and placed near the idol Dagon, in the City of Ashdod, the idol fell, the head and the hands being broken off, and God smote the inhabitants in the most secret part of their body; the earth brought forth rats, and there was a great mortality in the city". The painting contains two figures, probably those of physicians, in which the hand is held before the nose. The scene contains five rats; and it is interesting to recall that the biblical account says that the plague-stricken Philistines, in returning the ark of the covenant to the Israelites, sent with it five golden tumors or boils, and also five golden mice, "images of the mice that mar the land".

The fifth picture, from the museum at Marseilles, was painted by De Troy in 1722 for the Chevalier Rose. This knight had, during the plague of 1720, placed himself at the head of a body of convicts who were sent from Toulon to clean out the quartier St. Jean of an accumulation of rotting corpses of the plague victims.

The last illustration is a picture by Gros, of which we have a copy in the medical reading room, and the original of which is in the French Louvre. It shows General Bonaparte visiting the plague patients at Jaffa, on the 11th of March, 1799.

We are hardly concerned with a detailed study of the symptoms of the plague as described by the historians, poets, and early medical writers. Eloquent descriptions are given by Thucydides and Lucretius. The former speaks of the disorder as fastening on the stomach and bringing on all the vomits of bile to which physicians have ever given names; and of many of the sick who had no one to look after them plunging into the cisterns because of unceasing thirst. No one, we are assured, was ever attacked a second time, or not with a fatal result; and those who had recovered, "in their excess of joy, had an innocent fancy that they could not die of any other sickness".

Sprengel mentions a plague which occurred in 1568 at Paris and was complicated by a "putrid fever"; and of which the chief symptom was almost without exception the

atrocious headache by which the patients were tormented. Sometimes, however, carbuncles formed at the ends of the fingers, at the tip of the nose, and in other external locations. The seat of the disease was variously placed in the liver, the vital spirits, the groins, the armpits, and the ears.

In the Florence plague, according to Boecaccio's description, the issue of blood from the nose was a manifest sign of inevitable death. Ambrose Paré remarked that the prognosis was very unfavorable in the presence of cold sweats, the vomiting of black or green and fetid material, black tongue, urine which was black, greenish, bluish, or without sediment, and the risus sardonius. On the other hand it was stated that the thicker the urine, and the greater the amount of brick-dust sediment, the more reason there was to hope for recovery.

As might be expected, all emphasize the rapid spread and the dramatic swiftness with which the disease annihilates its victims. Boecaccio compares the spread of the contagion with the behavior of a fire in the vicinity of dry or oily fuel. In 1534, says Sprengel, the south of France was visited by so violent an epidemic that those who were attacked by it "fell on their backs" in that same hour, without it being possible to discover in them the least trace of any affection. Almost all, says Boecaccio, died within three days from the appearance of the buboes, and the greater part without any fever or other incident. "How many brave men," he laments, "how many beautiful women, how many graceful youths, who would have been judged in the best of health by no less than Galen, Hippocrates, or Æsculapius, in the morning breakfasted with their kindred, companions, or friends, and the following evening supped with those who had preceded them into the other world!"

At the first onset, there was often a striking unwillingness to acknowledge the presence of the dread disease. Thus in the early days of the great plague of London, many cases which were probably plague were set down in the bills of mortality as spotted fever.

This kind of scepticism, or even of wilful

blindness, was particularly marked in the Milan epidemic, as described by Manzoni from the writings of Ripamonte, Tadino, and others. Tadino is quoted as saying that the populace allowed itself to be persuaded by an ignorant barber (probably a sort of surgeon) that the first cases were not of plague, but due in part to autumnal vapors from the marshes, and in part to hardships which had been suffered during a recent war. Even when the authorities had begun to take preventive measures, they were met by determined opposition. Some of the leading physicians, who sought to impress the people with their danger, were actually stoned for their pains, and hooted as enemies to their country. At the same time, many physicians allowed themselves to be led by the popular prejudice, and were quite ingenious in applying the titles of ordinary diseases to every case of plague which they were called to treat. Even when the disease had become widespread, some physicians still refused to believe the truth, because some of their patients got well. One is reminded of the fondness of some modern doctors for assuring the parents of their infantile patients that the latter are not suffering from scarlet fever, but merely from scarlatina; for in the plague at Milan, the first step towards admitting the real presence of the plague was to call the disease a "pestilential fever".

The sanitary authorities of Milan at length employed a dramatic method of impressing the popular imagination with the real state of affairs. On the day of a certain pentecostal feast it was customary for the citizens to resort to the cemetery of St. Gregory, to pray for those who had died during an earlier epidemic and were there buried. On this very day an entire family died of the plague. When the crowd was at its densest, therefore, the corpses of this family were by order of the sanitary board brought to the cemetery on a wagon, naked, so that the people might see the unmistakable marks of the pestilence.

One of the most striking features of the various outbreaks is the chaotic disorganization of many of those affairs of life which are commonly most subject to custom and control. Boecaccio tells us that in Florence "the reverend authority of the law, both hu-

man and divine", was so weakened that each man did about as he pleased. Houses were deserted, and became almost common property, so that anyone used them who wished. Some indulged in a riot of dissipation, and others drilled themselves into close abstinence, as a preventive against the plague. The populace was seized by a panic dread of infection and death. The sick were left to die unattended, so that often, says Boccaccio, the neighbors became sooner aware of their disease by the smell of their decaying bodies, than in any other way.

Nobody, says Defoe, "put on black, or made a formal dress of mourning for their nearest friends; but the voice of mourning was truly heard in the streets; the shrieks of women and children were so frequent to be heard, that it was enough to pierce the stoutest heart in the world to hear them; although in the latter part of the visitation men did not so much concern themselves for the loss of their friends, expecting that themselves should be summoned the next hour". "How many historie families", says Boccaccio, "how many rich patrimonies, how many splendid fortunes, were left without a successor!"

As with most great human catastrophes, the accounts of the plague are accompanied by descriptions of signs and omens which heralded their approach. Says Defoe "A blazing star or comet appeared for several months before the plague, as there did the year after another, a little before the fire". Some heard voices warning them to be gone. Others, again, saw apparitions in the air. Defoe hastens to assure us that in his opinion they heard voices that never spake and saw sights that never appeared.

The Black Death, which began in Europe about 1348, was preceded by several earthquakes, and also, it is said, by a rainfall which lasted six months without interruption! Joubert, historian of the plague of 1564 in the south of France, speaks of a malign comet which had darkened the sun several months before the onset of the disease.

The Milan plague, states Manzoni, was said to have been announced, and its cause explained, by a comet which appeared in 1628, and by a junction between the planets

Saturn and Jupiter. Another comet appeared in the actual year of the plague. The relation of the comet with the plague was made more convincing by quotation from earlier writers, among them Livy, Tacitus, Homer and Ovid.

Thucydides tells us that during the Athens plague the people called to mind a verse which the elder men among them declared to have been current long ago: "A Dorian war will come and a plague with it".

In the London plague, according to Defoe, the people were badly scared by such books as "Lily's Almanack", "Gadbury's Alogical Predictions", "Poor Robin's Almanack"; with a variety of astrological conjurations, dreams, and old wives' tales. That the quacks were busy is evident from the following titles of their remedies: "Infallible preventive jills against the plague"; "sovereign cordials against the corruption of the air"; "exact regulations for the conduct of the body in case of an infection"; "incomparable drink against the plague, never found out before"; "the only true plague water".

One does not know whether most to admire the religious faith, or to condemn the superstition, of people who could attribute to their God so terrible a scourge as bubonic plague. Those of one religious sect or persuasion did not fail to regard the disease as due to the heresies of their opponents. "It is reported by many", says an Irish letter written in the early part of the seventeenth century, "few or no catholics die amongst so many that are on every side of them carried to their graves. And yet the protestants, but especially the puritans, spare not to say that this plague is come from God to punish the nation for their remissness and tolerance with catholics." But this sort of prejudice is ancient and deep-seated. Had not Jehovah thrust one great plague upon the people of Israel, which destroyed twenty-four thousand people, because an Israelite had brought a Midianitish woman into the camp; and another pestilence, which destroyed seventy thousand men in three days, because David had ventured to number the people?

When the plague was not attributed to divine wrath, it was commonly explained as due to the wiles of the devil, or to the machi-

nations of evilly disposed human beings. During the Black Death, while some whipped themselves as a penance before God, in other communities the Jews were persecuted as having caused the plague by placing poison in the water supply. The sudden stab of pain felt during the development of a bubo was probably responsible for the ancient superstition that the victim had been wounded by an invisible demon—a belief which was recorded in Constantinople in the sixth century, and is said still to survive in Mahometan countries.

(To be Continued.)

News Notes

On August 1st and 2nd the Colorado Ophthalmological Congress, organized by the Colorado Ophthalmological Society, met for the second time in Denver. There was a total attendance of fifty-three, including, in addition to members of the Colorado Ophthalmological Society from various parts of the state, visitors from Chicago, New Orleans, Wyoming, Kansas, Nebraska, Arkansas, Utah, Missouri, Oklahoma and Iowa. The meeting was a great success, and it seems likely that the Colorado Ophthalmological Congress will become a perennial institution. After the afternoon session on August 2nd, thirty members and visitors were driven in automobiles over the Denver Mountain Parks roads, stopping at the Pollyanna on Lookout Mountain for a delightful dinner.

The many friends of Dr. Helen Craig, formerly pathologist at the Denver County Hospital, were much interested to learn of her association with Dr. Phillip Hillkowitz in private laboratory practice.

Dr. E. B. Trovillion and Dr. Amy Miles, Boulder, were rather severely injured recently in a collision with a motorcycle.

Dr. and Mrs. Melville Black expect to travel to Detroit to purchase a new automobile early in September, and from that point will tour some of the eastern states in the car.

Dr. and Mrs. H. G. Wetherill are planning an automobile tour to New England during September.

Dr. W. S. Kenney died at Cañon City early in July, of pulmonary tuberculosis. He had been confined to his bed for the greater part of the time during the last three or four months. Dr. Kenney was born at Girardville, Pa., in 1871, and came to Cañon City several years ago from North Bend, Nebr. He leaves a wife but no family.

Dr. and Mrs. John W. Foley are away on a vacation trip to Skagway, Alaska. They will tour California on the way back, reaching Denver early in September.

Dr. S. D. Van Meter and his daughter Elfreda have been to Wyoming on a two weeks' hunting and camping trip.

Some curtailing of these news notes, and a slightly earlier appearance than usual of Colorado Medicine, are occasioned by the absence of the editor on a two weeks' vacation.

At the conclusion of the six weeks' post-graduate course in ophthalmology, conducted by the

University of Colorado in Denver, Dr. T. E. Carmody on July 28th at the Lakewood Country Club gave a dinner to those who had taken part in the course this year, either as teachers or as students.

Drs. M. E. V. Fraser and E. S. Pratt have planned to take an automobile vacation to the Mesa Verde National Park.

Dr. and Mrs. W. T. Little and son of Cañon City had a two weeks' fishing trip on the Gunnison River.

A considerable flutter in the hearts of a number of old established bachelors was created by the marriage on July 20th of Dr. Geo. A. Moleen to Mrs. Mary Luff Conway. Bold Benedicts have even whispered that Dr. Jayne's turn would come next, although this is generally discredited. Dr. and Mrs. Moleen spent their honeymoon in a ten-day automobile tour of the state. They will make their home at 1258 Marion Street, Denver.

Dr. and Mrs. D. G. Monaghan spent a July vacation at the Colorado Hotel at Glenwood Springs.

The man who recently stole Dr. Ranulph Hudson's automobile escaped conviction in the West Side Court on the ground, as Dr. Hudson puts it, that "he was not present when he did it."

Dr. and Mrs. John Inglis have been east on a vacation and, on the part of the doctor, a visit to some of the eastern clinics and hospitals.

Dr. and Mrs. W. H. Rothwell and family of Salt Lake City have been visiting the doctor's parents, Dr. and Mrs. W. J. Rothwell.

Drs. H. G. Wetherill, C. E. Tennant, S. D. Van Meter, and Arnold Taussig, have been appointed a committee to represent the Physicians' and Surgeons' Branch of the Denver Civic Association in the fight for the elimination of the smoke nuisance in Denver.

The Physicians' and Surgeons' Group of the Denver Civic Association recently adopted resolutions condemning the State's neglect of the insane.

The United States Department of Agriculture is taking special steps to forestall attempts on the part of unscrupulous persons to offer for sale so-called cures or remedies for infantile paralysis. Makers of such fraudulent remedies will be vigorously prosecuted whenever the evidence warrants action under the Sherley Amendment of the Food and Drugs Act.

The August number of "The Modern Hospital" is devoted to a symposium on welfare work among the industrial corporations of the country. There are editorials by those competent to write on this important subject, a great number of papers written by welfare directors in some of the most important industrial corporations, and an immense body of statistics and figures and facts showing the huge volume of work that the corporations are doing to protect their employees against sickness, accidents, and discontent.

Particulars of the very attractive post-graduate courses offered by the New York Post-Graduate Medical School and Hospital, a branch of the University of the State of New York, may be found in the thirty-fifth annual announcement deposited with the Medical Library of the City and County of Denver.

We are asked to state that the fourth annual convention of the Cremation Association of America will be held in the auditorium of the Hotel Gibson, Cincinnati, August 24th and 25th, 1916. Cremation has been advocated in various countries by a number of eminent physicians, including in Germany Virchow, in England Henry Thompson and Spencer Wells, in France Pietra-Santa, and in the United States Samuel D. Gross

and others. The United States has now forged ahead of Germany in the leadership of the cremation movement.

The following quotation from an advertising diary is seasonable:

"When August brings those hot 'dog days'

The Doctor for vacation prays;

And, if he has the price, he's off

To shore or mountain or play golf.

If not, he says with pensive frown,

'Too busy—have to stay in town.'"

Dr. N. Eugenia Barney of Sterling has returned from an extended eastern trip.

Dr. J. H. Bush of Sterling has returned home after taking a post-graduate course in the east.

The threatened malpractice suit against one J. H. Kellogg of Sterling has been settled out of court, by payment of \$300. This case was for a severe X-ray burn received by the plaintiff.

Dr. J. H. Bingham of Sterling delivered the memorial address for the K. of P. Lodge at Holyoke recently.

Dr. F. W. E. Henkel, after attending the A. M. A. meeting in Detroit, is now taking post-graduate work at the New York Post-Graduate Medical School.

Dr. J. S. Fox is still serving in western Europe, having been raised to the rank of captain in the English army service.

Dr. Henry Cooper has left Durango, Colorado, and is now located in Mohrland, Utah

Medical Societies

NORTHEAST COLORADO.

The Northeast Colorado Medical Society met in regular session at the city hall, Sterling, on July 5th, 1916, Dr. J. K. Dawson presiding. A very valuable paper was presented by Dr. Dawson on typhoid fever. This paper was freely discussed by Drs. Chipman, Fox, Naugle, Barney and Babcock. It was the consensus of opinion that there was no excuse for typhoid fever at the present time. Better sanitation and the prophylactic injection of the dead bacteria should banish this dread disease. It was suggested that the physicians should begin a campaign of education so that more people would avail themselves of vaccination against this disease.

It was decided to suspend the regular meetings of the society during the hot weather.

MYRON L. BABCOCK,
Reporter.

LAS ANIMAS COUNTY.

The regular meeting of the Las Animas County Medical Society was held Friday, July 7th. The members present were: Drs. James G. Espey, L. T. Richie, C. O. McClure, D. C. Thompson, G. W. Robinson, H. E. Abrahams, A. J. Chisholm and Dr. Muir of Folsom, N. M.

The regular order of business was conducted and a very able paper was read by Dr. C. O. McClure on "The Diagnosis of Nephritis," which was thoroughly discussed by all present.

A. J. CHISHOLM,
Secretary.

FREMONT COUNTY.

The Fremont County Medical Society held a regular meeting at the office of Dr. V. A. Hutton

July 24, 1916. Various papers were read and discussed, after which a lunch was served. Men of the profession from every part of the county were in attendance, among them Doctors W. Little, E. C. Webb, Otis Orendorff and Pitt A. Wade of Cañon City, Frederick A. Bleese of Penrose, D. D. Hamilton of Howard, Noonan of Chandler, and L. E. Rupert, V. A. Hutton and R. C. Adkinson of Florence.

Book Reviews

Blood-Pressure: Its Clinical Applications. Second Edition, Revised and Enlarged. By George W. Norris, A.B., M.D., Assistant Professor of Medicine in the University of Pennsylvania; Visiting Physician to the Pennsylvania Hospital; Assistant Visiting Physician to the University Hospital; Fellow of the College of Physicians of Philadelphia. Octavo, 424 pages, with 102 engravings and 1 colored plate. Cloth, \$3. net. Lea & Febiger, Publishers, Philadelphia and New York, 1916.

Those who have read or have had occasion to refer to the first edition of Norris' excellent book will require no introduction to the second edition. That it has met a genuine need is testified by the appearance of a second edition within two years after the publication of the first, while the slight changes which have been found necessary in this prove the careful and accurate character of the earlier edition.

Such changes take the form of amplification of earlier statement and practically no wholly new matter has been introduced. Increased emphasis is laid on the importance of estimation of the diastolic pressure and of the pulse pressure; the clinical interpretation of circulatory conditions from blood pressure readings is more clearly formulated; and the section on the determination of the functional capacity of the heart by means of blood pressure measurements is expanded. Crampton's test being described and discussed in detail. Extension of the section on the relation of blood pressure to athletics reflects recent interest in this subject. The chapters on the "Physiology of Blood Pressure" and "Venous Blood Pressure" are as before well written by Dr. J. Harold Austin.

This book can be heartily commended to all who are interested in the clinical applications of the important subject of the blood pressure.

C. N. M.

The Mortality From Cancer Throughout the World. By Frederick L. Hoffman, LL.D., F.S.S., F.A.S.A.; Statistician The Prudential Life Insurance Company of America; Chairman Committee on Statistics, American Society for the Control of Cancer; Member American Association for Cancer Research; Associate Fellow American Medical Association; Associate Member American Academy of Medicine, etc. The Prudential Press, Newark, N. J., 1916.

The much-needed awakening among physicians and laity to the menace offered by the increasing mortality from cancer has stimulated the production of a quite enormous literature. Much of this has been of a semi-popular occasional nature, contributing largely perhaps to a widespread interest in the subject and a realization of the importance of the problem, but aiding very little in the solution of the problem itself.

The work here presented by Hoffman is, how-

ever, of an entirely different character. He has applied to the cancer problem the close reasoned and accurate statistical methods long employed by insurance companies in other fields. These are considered in order of applications of the statistical method to medicine and to the cancer situation in particular, with the inherent fallacies and possibilities of misinterpretation to which the method is liable; the statistical evidence for and against a real increase in cancer mortality; the relation of cancer to occupation and to geographical location; the statistics upon its incidence as obtained from the experiences of leading life insurance companies, and data upon the occurrence of the disease in the states and cities of the United States and in foreign countries.

To each of these chapters there is appended a series of very complete statistical tables giving in detail the data summed up in the reading matter. The final chapter is devoted to careful and conservative "Observations and Conclusions" as to etiology and treatment, together with well considered proposals as to methods of further attack, suggested by the data presented.

Such a bare table of contents necessarily gives but an inadequate idea of the scope and thoroughness of the volume, but its array of statistics and isolated facts does not lend itself to more detailed discussion. There has long been a truism in medicine that before any problem can be rightly and permanently solved the facts relating to it must be patiently collected and carefully analysed. The service of collection and sifting has here been admirably performed by Hoffman. C. N. M.

Practical Medicine Series, 1916, Vol. II, General Surgery. Edited by John B. Murphy, A.M., M.D., LL.D., etc. The Year Book Publishers, Chicago. Price, \$2.00.

Medical literature of the past year has shown notable advances in military surgery. Hypochlorite of calcium with boric acid has been found the best wound disinfectant. This mixture is like Labarraque's solution except for the addition of the boric acid. Acetone and alcoholic solution of pyxol are favored hand disinfectants. Ether as intra-abdominal and intra-articular antiseptic in acute arthritides is strongly advocated.

Vaccine problems are making advancement, especially the autogenous and auto-sensitized. Rose now has shown that the bacteria are so uniform in their elective points of attack that for best results vaccines must have the same specific election of fields.

Increasing mortality in appendicitis has come because of failure in diagnosis and procrastination in action. Cholecystectomy is now more common and cholecystostomy is being less relied upon.

The treatment of the arthritides, and the prophylaxis and treatment of gas gangrene are not yet solved and promise big fields.

Considerable space is given up to osteomyelitis. This is most often due to staphylococcus aureus, and should be treated immediately on diagnosis by adequate drainage. If the whole shaft of the bone is destroyed, the pus must be drained but the bone left for six to twelve months until a complete involucrum is formed and strong enough to support the limb. Then the sequestrum should be removed in toto. R. G. P.

The Gold-Headed Cane, by William Macmichael, M.D.; with an introduction by Sir William Osler and a preface by Francis R. Packard, M.D. New York, Paul B. Hoeber, 1915. \$3.00.

The Gold-Headed Cane with an introduction by Osler and a preface by Packard is very welcome in this new edition, a reproduction of the second and enlarged edition of 1828, which was demanded by its popularity. The book provides for the present generation that savor of the best traditions of English medical life of the eighteenth century that has endeared it to so many readers during the past ninety years.

A gold-headed cane was an essential part of the apparel of the somewhat pompous English physician of London of the older school and it was supposed to add to his dignity and effect. This Cane differed from those then in vogue by having a cross handle instead of a knob and in the absence of the usual receptacle for smelling salts carried to ward off contagion. It was associated with medical success and during several generations was handed down from one practitioner to another—all friends, choice spirits and prominent in their day—for a hundred years until, as it says in its quaint story, "I ceased to be considered any longer as a necessary appendage of the profession and consequently the opportunities I enjoyed of seeing the world or even of knowing much about the state of physic, were greatly abridged, and of rare occurrence" and the Cane found a resting place in a case in the Library of the College of Physicians of London as a revered relic of the past.

The possessors of the Cane, Radcliffe, Mead, Askew, the Pitcairns and Baillie were distinguished men of their day, cultivated, book-lovers, and mingled with the best society of their time. The Cane had a most interesting career and its reminiscences, told in an easy narrative style in the form of an autobiography with all the intimacy of personal contact and observation, yet with an infinite respect for the dignity and authority of its owner, give it a peculiar claim upon the attention of those who find enjoyment and profit in looking backward upon those who have gone before and held high the honor and dignity which our profession has held for so many years.

The book has been a rarity for the present generation and we congratulate Mr. Hoeber for his enterprise in making it available in such an attractive form and type with its old-time illustrations of men and places. We heartily commend this delightful work to our readers for their leisure hours. W. A. J.

Modern Medicine and Some Modern Remedies, by Thomas Bodley Scott. Paul B. Hoeber, New York, Publishers. Price, \$1.50 net. 1916.

This small volume of one hundred and sixty pages is an attempt by a general practitioner of England to put into expression the truths and experiences gathered from a practice of many years. His idea is a good one, for it creates a tendency in the busy physician to put into writing valuable results of numerous personal observations at the bedside which might otherwise never come to light. In four essays Dr. Scott has taken as his theme the general scope and usefulness of the internal secretions, dwelling upon disorders of the heart and arterio-sclerosis in a very interesting and readable fashion. His essay on "Speculations and Doubts" treats purely of the internal secretions, and is comprehensive. The book closes with a few pages on chronic bronchitis and bronchial asthma.

For a couple of hours of useful as well as pleasing reading, this book can be recommended to stimulate a desire to imitate the author and also

to brush up on the newer and more advanced ideas of modern treatment. R. H.

Clinical Disorders of the Heart Beat, by Thomas Lewis, M.D., D.Sc., F.R.C.P. Published by Paul B. Hoeber, New York. \$2.00 net, 1916. Third Edition.

This is a good work. Dr. Lewis has taken a subject of which the rank and file of medical men know but little, and has put into a condensed and practical form the more obscure and yet vitally important phases of abnormal heart action, namely, sinus arrhythmia, heart-block, premature contractions, simple paroxysmal tachycardia, auricular flutter, auricular fibrillation, and alternation of the heart, dealing with each condition concisely, clearly and with originality. The book is well worth the price, will repay study applied to its pages, and is not overburdened with tiresome and useless data. R. H.

Practical Points in the Diagnosis and Treatment of Heart Disease, by E. M. Brockbank, M.D., F.R.C.P. Second Edition, 1916. Paul B. Hoeber, Publishers, New York. Price, \$1.25 net.

This is a convenient pocket form of a practical working book of clinical reference for the use of students. It is practically a work on physical diagnosis of heart conditions, with methods and means of determining pathological cardiac states. Diagrammatic illustrations are abundant and good and the explanations are easily grasped. Treatment in a general way is taken up with each subject. R. H.

1915 Collected Papers of the Mayo Clinic, Rochester, Minn. Octavo of 983 pages, 286 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Cloth, \$6.00 net; half morocco, \$7.50 net.

This volume contains ninety-two selected papers by thirty-seven representative men at the Mayo Clinic.

As is usual, the subject of gastric and duodenal pathology commands a considerable space in articles written by William Mayo, Beckman, Graham, Eusterman and Carman. In the matter of differential diagnosis of gastric and duodenal ulcers, we are surprised to read that after a review of ten years, comprising 1,300 cases of operatively demonstrated duodenal ulcer and 450 cases of gastric ulcer, it is admitted that no pathognomonic symptom or group of symptoms is found for defining ulcer location. Of the 1,300 cases, only 54 per cent were rightly diagnosed, and of the 450 gastric cases, only 55 per cent were correctly named.

There are five new papers on Studies in the Etiology of Cancer, but nothing new has apparently been brought out as yet, though the pathology of chronic mastitis and breast cancer is thoroughly dealt with.

In "Some Mechanical Derangements of the Knee Joint", Henderson describes several instructive operative cases, discussing the anatomy and pathology, and the indications for operation. Though sixty-three joints were opened for damaged internal semi-lunar cartilage, not a single case of damaged external semilunar was found.

The most scientific work is that on the ductless glands, and especially is the work on goitre exhaustively reviewed. R. G. P.

A Text-Book of Fractures and Dislocations, With Special Reference to Their Pathology, Diagnosis and Treatment. By Kellogg Speed, S.B., M.D., F.A.C.S., Associate in Surgery, Northwestern University Medical School; Associate Surgeon, Mercy Hospital; Attending Surgeon, Cook County and Provident Hospitals, Chicago, Ill. Octavo, 888 pages, with 656 engravings. Cloth, \$6.00 net. Lea & Febiger, Publishers, Philadelphia and New York, 1916.

Within the last two years we have had a number of publications upon this subject. Much of the literature must of necessity be repetition, and the reader who purchased all the publications upon this subject would have his shelves burdened with a good deal of dead material. It might have been well for the publishers to eliminate the words "with special reference to their pathology, diagnosis and treatment" for little else is left to give special attention to.

The author has attempted a method of illustration and demonstration which is somewhat different from the methods readers are familiar with. He has eliminated reproductions of X-ray pictures, and given us tracings made from the pictures, bringing out the essential features—a method which is not without value, as too often the bookmaker's work in reproduction of X-ray pictures is so poor that the plates are valueless.

It would seem that the author might have used photography to better advantage by giving us more pictures illustrating deformities of various kinds. Some of the drawings, notably those illustrating Kocher's method for reduction of shoulder dislocations, are woefully bad.

The subject matter is well arranged and the subject of treatment is handled in a thorough manner. Especial attention is given to the discussion of indications for and against operative treatment, and it is interesting to note that the author has devoted several pages to the operative technique of the removal of Lane's plates—a demonstration of the view held by many that Lane's plates have a very limited field of usefulness.

The author is to be commended for devoting so much space to the careful consideration of injuries at the ankle joint, a subject of greatest importance and one which some text-books treat in a perfunctory manner. The chapters devoted to treatment are worthy of careful study. C. B. L.

Workingmen and Alcohol.—A recent study of how one thousand workingmen spend their spare time and their spare cash indicates that by far the largest amount of spare cash is spent for beer—23 per cent of the total. Including beer, wine and whisky, the amount of spare cash spent by workingmen for intoxicating liquor amounts to 34 per cent of the total. These percentages are not of the total amount earned—they represent the items over and above what is required for the necessities of life.

The expenditure for beer shows a steady decline as wages increase—for example, men earning \$35 or more per week spend 7.6 per cent of their spare cash for beer. Those receiving less than \$10 per week spend 39.9 per cent of their spare cash for beer.

It has also been discovered that the man who works the longest hours per day spends the most time in the saloon. This proves conclusively that the workingman who is most fatigued at the end of the day's work is most likely to crave artificial stimulant.

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Social Insurance.—During the past year the number of states and territories having workmen's compensation laws has increased from twenty-three to thirty-three. In 1915 laws were enacted in Alaska, Colorado, Hawaii, Indiana, Maine, Montana, Oklahoma, Pennsylvania, Vermont and Wyoming. Only three of the new acts are compulsory for the industrial workers, that is, those of Hawaii, Oklahoma and Wyoming.¹ The law of Wyoming is interesting in its method of administration, being a straight insurance measure, all indemnities being paid out of a state fund made up by assessments imposed on employers, and an additional 25 per cent, not, however, to exceed \$40,000, contributed by the state.

¹Andrews, I. O.: American Year Book, 1915, p. 448.



ANNOUNCEMENT

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THE PHYSICIANS' AND SURGEONS' EXCHANGE will be pleased to give you every assistance in communicating with the Physicians, Surgeons of Denver by Long Distance Telephone.

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COLORADO MEDICINE

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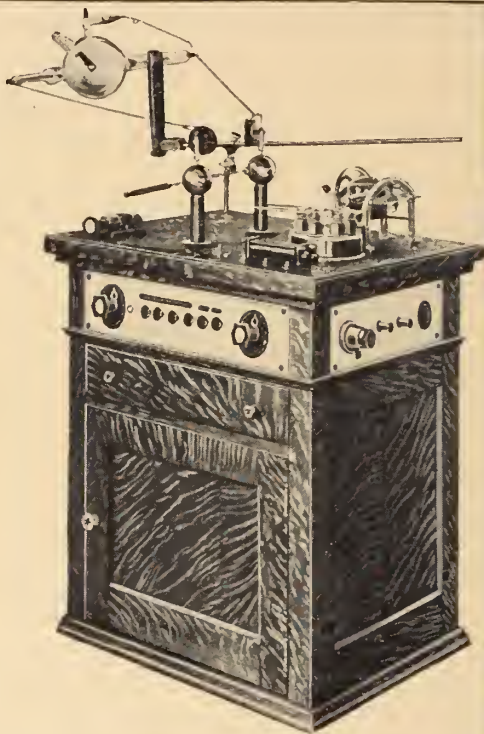
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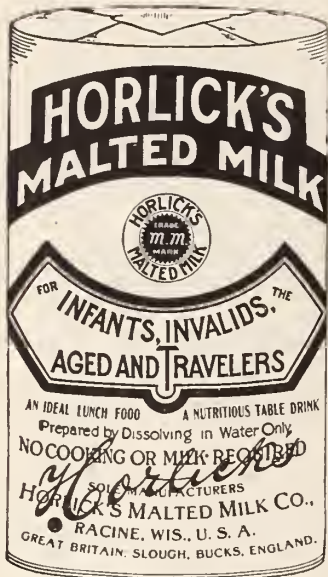
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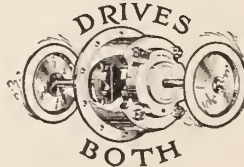
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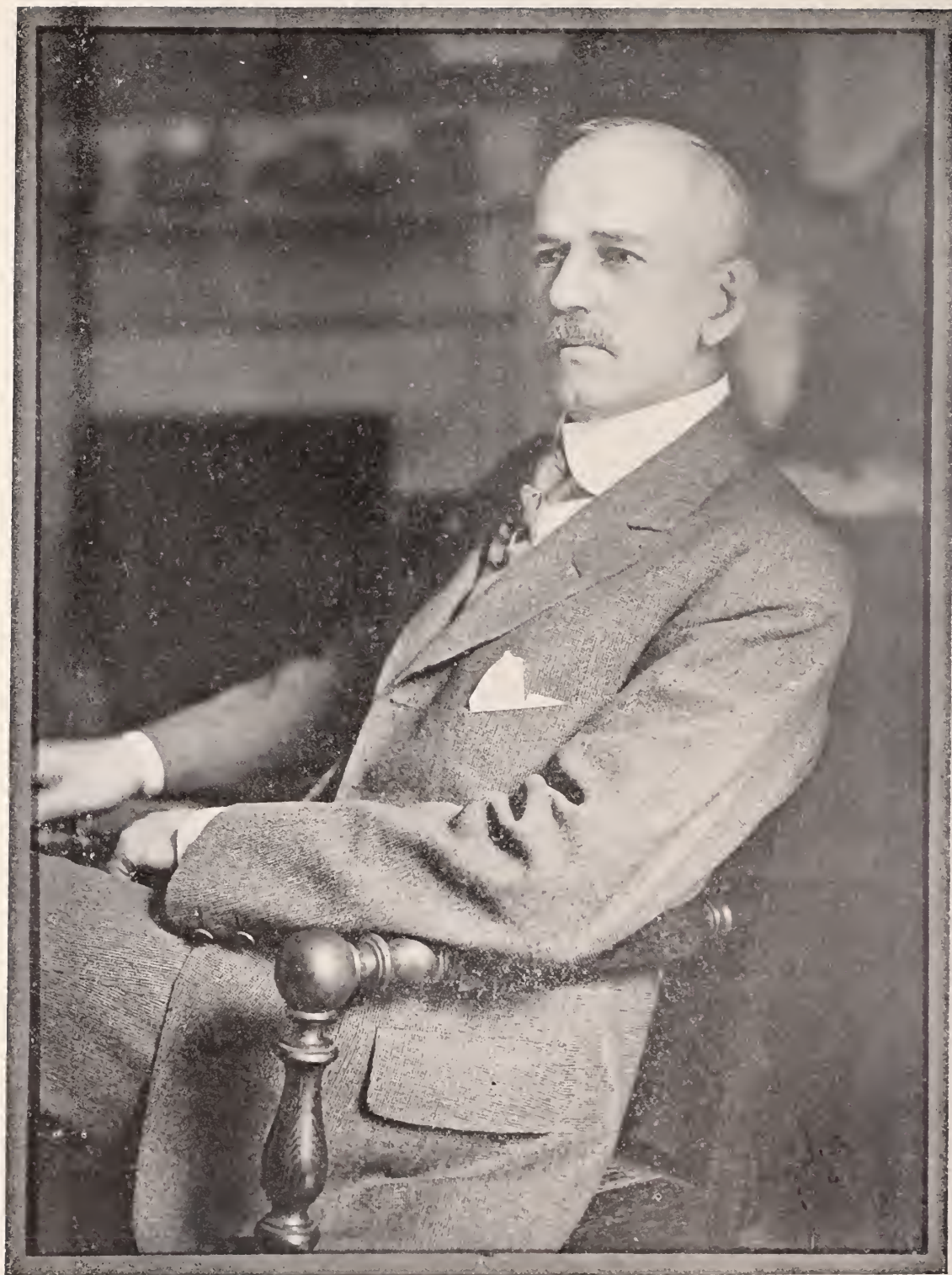
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President of the Colorado State Medical Society, 1916-1917

Colorado Medicine

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No. 9

Editorial Comment

THE GLENWOOD SPRINGS MEETING.

The prospective terrors of the threatened railroad strike were responsible no doubt for a decided reduction in the number of those present at the meeting of the State Medical Society at Glenwood Springs this month; but in spite of this difficulty the attendance, although small as compared with that which is usually to be found at meetings in the larger cities of the state, was fully up to the previous record at the same meeting place. All who went seem to have felt that the meeting was a thorough success, the local plans for entertainment being very generous and pleasing, and the scientific program reaching more than the average level in the interest of the papers presented.

Several matters of importance came before the House of Delegates. The referendum on the subject of medical defense was reported to have resulted in the adoption of the principle of cooperative protection against liability to malpractice suits. A special committee was instructed to devise ways and means for putting the decision of the members into effect. This committee is to present a completed plan to the House of Delegates next year. As regards the Workmen's Compensation Acts, a special committee is to be appointed to assist the Legislative Committee and the Industrial Commission of Colorado during the coming session of the legislature in an effort to increase the sum total payable for any one injury to a greater amount than that allowed by the law at the present time, namely, \$100.

A number of alterations, many of them of

minor importance, were made in the by-laws. The most important change was one placing the date for naming delegates from local societies to the state organization at December 31st.

The following officers were elected for the coming year: President, Dr. A. C. Magruder, Colorado Springs; first vice-president, Dr. S. B. Childs, Denver; second vice-president, Dr. A. L. Trout, Walsenburg; third vice-president, Dr. W. W. Frank, Glenwood Springs; fourth vice-president, Dr. A. J. Nossoman, Pagosa Springs; delegate to the American Medical Association, Dr. Oliver Lyons, Denver; alternate delegate, Dr. C. W. Plumb, Grand Junction; councillors, Dr. M. R. Fox, Sterling, and Dr. Samuel French, Meeker; member of the Publication Committee, Dr. Philip Hillkowitz, Denver.

The next annual meeting of the society will be held at Colorado Springs in September, 1917.

OUR NEW PRESIDENT.

Dr. Alexander C. Magruder, President-elect of the Colorado State Medical Society, is, as presidents go, a young man, having been born in 1867. He is a native of Richland, Holmes County, Mississippi, and received his pre-medical education in the south, obtaining the degree of Bachelor of Sciences in 1888 and the Master's degree two years later. In medicine he graduated from Tulane University of Louisiana in 1900. He later studied ophthalmology, otology, rhinology, and laryngology in London, Berlin, and Vienna, and at the Manhattan Eye and Ear Hospital in New York City, and for the past ten years he has practiced these specialties at Colorado Springs.

"FOLLOW UP" AFTER SURGICAL OPERATIONS.

"The operation was successful but the patient died", says the popular cynicism. The measurement of efficiency in method is in the results obtained. The proof of the advantages, if any, which have been gained from an operation on the human body is to be found in the condition of the patient, not during the first few weeks of enthusiasm and credulity on the part of surgeon and layman, but in the relative freedom from symptoms, and also in the general health and strength of the patient, six months, one year, or even two years afterwards. With regard to many operations of which an optimistic report is given shortly after healing of the wound of incision, no late or mature after-study of the case is attempted; the consequence being that the surgeon, if he be conscientious, is greatly limited to his ability to speak with certainty as to the end results in further examples of the same surgical condition.

Bancroft (Johns Hopkins Hospital Bulletin, vol. 27, number 201) states a clear case for the systematic application of "follow-up" methods, and details the lines along which they are employed in the second surgical division of the New York Hospital. The basic principle is that every surgical patient should be followed for at least one year. The data to be obtained from a follow-up system are most important with regard to those patients in whom operation is indicated for the improvement of health and economic efficiency, and of less significance in relation to those for whom operation is necessary to save life. A patient coming to a surgeon with a more or less chronic condition should be able to obtain advice (1) as to the percentage of risk attached to the particular operation which is proposed; (2) as to how long he will be laid up by the operation; (3) as to how soon he may expect to be restored to maximum efficiency; and (4) as to the chances of his condition relapsing.

If study of the late results of operation indicates that the procedures employed are not giving permanent relief, this informa-

tion should stimulate the development of improved methods. A further advantage to be hoped for is a reduction in the number of cases returning for secondary operation, and a diminution of the frequency of such surgical complications as sepsis, phlebitis and cystitis. The gain is not limited to the individual patient, but means an increase in the number of patients who can be passed through a given hospital in the course of a year, with an incidental reduction in the per capita expense.

The details in the follow-up system employed in the New York Hospital, as described by Bancroft, include a record of the pre-operative and post-operative diagnoses; a request to each patient on leaving the ward that he will return for observation at the end of three months, and, if at that examination there is no need for earlier observation, a request at that time that he will report again at the end of a further nine months. If the patient does not return as requested, a letter is written asking him to return on the following Sunday. If the patient does not report within a week, the case is investigated by the special service nurse, and the patient induced if possible to report for examination. The selection of Sunday morning for the return of the patient was based upon the fact that this is the day upon which most working people are at liberty.

The post-operative record deals with (1) the local condition, as to pain and function; (2) the economic efficiency of the patient; (3) the comparison of the general condition before and after operation; and (4) a review of the general bodily functions. An important detail of the follow-up system has proved to be an interview between the patient and the house surgeon at the time of discharge, when the patient is carefully impressed with the thought that he may be benefited by the return examination.

ELIE METCHNIKOFF.

"I am an exact investigator, but my investigation takes its origin in a philosophy which promises to mankind a golden age." In this optimistic vein Metchnikoff referred

to the theory by which perhaps he will long continue to be best known in the popular mind. He spoke of his belief in the possibility of so lengthening human life that men should die at an advanced age, weary of their days, without fear of death, rather with an instinctive impulse toward death, just as one feels the impulse to sleep. His investigations as to the cause of senility had persuaded him that senile changes in great part are due to resorption of poisonous substances produced in the intestines. A very extensive sale of buttermilk artificially produced by means of the Bulgarian bacillus is based upon Metchnikoff's theory that this bacillus has the quality of driving out injurious microbes.

Like Pasteur, Metchnikoff began his career not as a physician, but as a naturalist, being led to the study of medical bacteriology by the trend of his work in various bacteriologic phenomena in lower forms of life. He was born in 1845 in Russia, but left that country as the result of disturbances in the University of Odessa, occurring during the reaction period which followed the assassination of Czar Alexander II. His studies in phagocytosis brought him into contact with Pasteur, through whom in 1905 he was made vice-director of the Pasteur Institute in Paris.

In 1908 Metchnikoff was awarded the Nobel prize for physiology and medicine together with Ehrlich, for work on immunity. In this connection it is interesting to note how the several important theories on immunity have been influenced by the predilections of those who gave them to the world. Thus Pasteur had originally the view that when microbes cannot thrive in the human body, it is because of a lack of one or more substances which are necessary for their nutrition, just as plants demand certain chemical substances for their well-being. The zoologist Metchnikoff had observed in the course of his microscopic studies of lower animals that certain cells are able to take up foreign bodies within themselves, and by this route he arrived at a purely "cellular-pathologic" conception of immunity. Other investigators, who in general worked by histologic-chemic methods, invented a "humoral-pathologic" theory. Metchnikoff's phag-

ocytosis theory later received strong support in Wright's work on opsonins.

JOHN BENJAMIN MURPHY.

The death of Dr. John B. Murphy of Chicago, which occurred too late for notice in the August issue of *Colorado Medicine*, removed from American medical ranks one of the country's ablest surgeons and teachers. Newspapers found picturesque material in the fact that Dr. Murphy had definitely diagnosed the character and location of the disease from which he had suffered intensely for several months, and that he had personally requested that a post-mortem examination should be made to determine the accuracy or otherwise of this diagnosis. Dr. Murphy, who was born in 1857 and was brought up on a farm, was chief of the surgical staff of the well-known Mercy Hospital in Chicago from 1895 until the time of his death. He was president of the American Medical Association in 1910 and 1911. The well-known "Murphy button" was first described by him in a paper published in 1892, and he was the author of many other scientific papers of importance. The popular *Murphy's Clinics* first appeared in February, 1912. As has been stated widely, his death was due to aortitis, which manifested itself in attacks of angina.

VICTOR HORSLEY.

Although in the space of two years the European war has robbed the world of many who had been leaders in the pursuits of peace, few of these have stood so high in their respective callings as Sir Victor Horsley, of whom Sir William Osler writes that "he combined the experimental physiologist and the practical surgeon in a degree unequalled since John Hunter". After constant activity with the medical branch of the English army since the outbreak of the war, in March of this year, at the age of 58 years, he volunteered for medical service in Mesopotamia, where cholera was rampant among the troops. He died of heat stroke after an illness of only about thirty hours, during which his temperature had risen to 108 de-

grees. From 1884 to 1890 Horsley carried out investigations concerning the thyroid gland which demonstrated that myxedema was caused by the loss of this organ, and in 1890 he suggested the use of thyroid grafts in the treatment of this disease. With several other workers he recharted the cerebral cortex. In surgery of the brain and spinal cord he led the world. His research work, mainly on the nervous system, only ceased when, in 1913, he gave up his laboratory at University College. A report of the first successful laminectomy for tumor was published by him in conjunction with Gowers in 1887. On account of his incessant activity in research work upon animals, he has probably received in his time more vindictive abuse than any other man, by the body of fanatics known as antivivisectionists; yet cruelty was foreign to his nature (says one of his friends), he was deeply fond of animals, and he would never undertake any procedure, however insignificant, that might be painful without insisting upon an anesthetic. To his personal discovery that the use of alcohol interfered with reading for examination is said to have been due his life-long opposition to intoxicants, and his last letters contained many expressions of regret for the English national drinking habits.

Original Articles

ABDOMINAL PAIN.*

JOHN R. ESPEY, M.D., TRINIDAD, COLORADO.

Mr. Hilton¹, the London surgeon, years ago opened a course of lectures to his colleagues with the statement: "There are duties which are difficult of fulfilment pertaining to every position in life; and there are duties attached to public professional life, from which no man can assume to himself the right to shrink, with whatever diffidence and feeling of incapacity they may be undertaken".

It is in full sympathy with his modest statement that I have produced a presiden-

*President's address, read at the annual meeting of the Colorado State Medical Society, September 5, 6 and 7, 1916.

tial address to be read before this Society.

The choice of a subject has of itself been by no means easy. My predecessors have so recently brought the progress of our art up to date as to leave me a comparatively barren field to glean composed of more or less incomplete or unproven theories lifted from recent journals and annuals.

Practically all suggestions concerning medical organization are rendered unnecessary by the efficient work of our House of Delegates, its committees and officers.

The composition of this Society of surgeons, internists and many specialists makes the selection of a subject pertaining solely either to medicine or surgery inappropriate; and I have been able to satisfy myself only by studying a symptom which appeals alike to the internist and the surgeon. I have chosen that symptom which is perhaps more often the cause of either the physician or surgeon being called than any or all others, namely, pain. As the subject is such a large one I shall limit my remarks mainly to abdominal pain.

As it combines the thought of both the physician and poet I cannot forego the opportunity to quote a stanza from Weir Mitchell's² "The Birth and Death of Pain".

"What will implacable, beyond our ken,
Set this stern fiat for the tribes of men!
This none shall 'scape who share our human
fates:

One stern democracy of anguish waits
By poor men's eots—within the rich man's
gates.

What purpose hath it? Nay, thy quest is
vain:

Earth hath no answer: if the baffled brain
Cries, 'tis to warn, to punish—Ah! refrain.
When writhes the child beneath the sur-
geon's hand

What soul shall hope that pain to under-
stand?

Lo! Science falters o'er the hopeless task,
And love and faith in vain an answer ask,
When thrilling nerves demand what good is
wrought,

Where torture clogs the very soul of
thought."

Now in treating of pain as bearing on
diagnosis, I would not be understood to

think that a diagnosis can often be made from pain alone or even that pain is the most important factor in making a diagnosis; but rather that it may be profitable to follow one symptom through several different conditions and see wherein the pain differs. The manifestations of disease that are objective and therefore capable of objective estimation are of course especially valuable and form the main reliance in making a diagnosis. Often, however, we are unable to find definite objective symptoms to start from; and when taking cognizance of subjective symptoms we find pain with its various manifestations and often bizarre descriptions one that we would most like to interpret.

I do not know how much if any exaggeration there may be in the statement that 90 per cent of our patients call us to relieve or to account for some pain; but if we cannot reduce it to a percentage we do realize that such is the primary object of many of our ministrations.

Furthermore, pain is often the *only* initial evidence of disease—appearing before the objective symptoms are apparent; and this is especially so in those abdominal diseases where early diagnosis is of the utmost importance.

Dempster³ says: "An accurate diagnosis frequently depends on the proper interpretation of pain. Less is known about pain than any other symptom, largely because we know less about the nervous system than any other system in the body."

We are not justified in treating pain with indifference, nor in regarding it as an entity. As pain is only the evidence of injury to living tissue, it is inconsistent and only hides our lack of definite knowledge to give it a name which has no pathological meaning. The various algias should be replaced with terms combining anatomical, etiological and pathological significance. That this is difficult, often impossible, with our present light we must admit, but the progress of medicine is a continuous struggle with the limitations of incomplete or misinterpreted knowledge, and we may hope that clear thinking and much study will bring us into a brighter light in this as they have in other fields of

medical endeavor. The belief formerly prevailing that abdominal pain was a neurosis, a product of excessive or deficient motility, of hyper- or hyposecretion, has now been largely abandoned and the linking of these pains with definite pathological lesions has circumscribed the importance of the neuroses. While the pains that can be ascribed to neuroses have thus been limited, I do not doubt the existence of pure abdominal neuroses just as they occur in any other region so richly endowed with a duplex system of nerves and ganglia.

Moynihan⁴ proclaims that "persistent, recurring hyperchlorhydria is duodenal ulcer."

Except the physiological pains of gestation and labor, I am not aware that pain ever occurs otherwise than as an evidence of disease, injury or some transgression of nature's law sufficient to cause a deviation in function.

While we often entirely overlook the significance of pain it is also quite possible to exaggerate it. Each individual at some time experiences pain. It is the general experience of any lapse from normal health and is nearly always present in disease. It is a necessary adjunct to the development of the race, the protection of the individual and of the various organs and tissues of the individual. The cornea that was unable to respond with pain to the stimulus of a foreign body would be liable to ulceration and destruction.

I believe that while pain persists nature still hopes for a cure either spontaneously or by some action which she is trying to suggest. Peritoneal pain requiring operation and in which operation offers a reasonable hope of effecting a cure continues to be more or less agonizing; but how ominous a portent is it when that pain suddenly ceases without a removal of the cause. While there may be exceptions, the sudden stopping of pain in the presence of peritonitis is a precursor of dissolution.

Cabot⁵ says: "The diagnosis of abdominal pain is one of the most unsatisfactory, as well as one of the most important, in medicine; unsatisfactory, because our methods of examination are so inadequate."

Owing to the frequency of gastric pain in various and but distantly related abdominal diseases, the stomach has been called the signal box of the abdomen. These signals we understand but dimly as an evidence of disease either in the abdomen or in certain of the thoracic organs. That by concentrating our attention on their interpretation we may finally receive information from them nearly as definite as that conveyed by the pain of a foreign body on the cornea is a hope as yet distant from fulfilment.

Mayo⁶ has said that 40 per cent of gastric pains are due to causes outside of the abdomen, 40 per cent to causes within the abdomen other than the stomach, and only 20 per cent to diseases of the stomach itself.

Of course in the present era, any investigator meeting with a gastric pain would look carefully into the right iliac fossa in his search for a cause. He would also remember that a diseased gall bladder more frequently gives gastric symptoms than those strictly symptomatic of its own diseases.

The ease with which we make a diagnosis of appendicitis from the nature and location of the pain and tenderness is not unlikely to occasionally lead us into error, as diseases of the right genito-urinary tract may present a very similar syndrome—notably so a stone eneysted in the nreter or even the pain and tenderness of a floating kidney.

As the pain of a fracture or a sprain may be beneficent by enforcing rest and an opportunity for repair, so may an abdominal pain be merely a plea for functional and physiological rest. It may not, however, be so easily understood, as, while calling on a broken leg for support would give pain immediately connected with that effort, a stomach or intestinal pain would not necessarily be immediately aroused by deglutition; and indeed gastric pains are sometimes allayed by the ingestion of food that will subsequently increase the pain.

While we recognize the beneficent action of pain as a sentinel telling us that all is not well, pain may itself be most formidable and either by the shock of fierce onset or the exhaustion of its continued nerve racking may cause collapse or death.

Referred or sympathetic pain has baffled

us in our efforts to locate pathology from this symptom. It is frequently transmitted to a healthy part as an indication of disease in another location. In a lesion near the origin of a nerve the pain may be felt in the periphery of that nerve or perhaps in another branch of the nerve. However, if the pain confines itself absolutely to the distribution of one nerve the lesion is probably to be found in the course of that nerve.

Among the characteristics of referred pains are the following: They are not increased on pressure or movement, they do not produce muscular stiffness as do inflammatory pains, and lastly, morphine as a rule does not relieve them for any length of time. Generally speaking, absence of tenderness in a region that is painful is indicative of referred pain except in neuralgias and nervous diseases.

We have no scientific and reliable instrument by which we can measure pain; nor if we could accurately measure pain would it tell us the importance of the lesion causing it.

Some temperaments and some individuals honestly and sincerely suffer more pain from an identical illness or injury than others, and some suffering the same amount of pain give more expression to it than others. An individual of a phlegmatic temperament probably would suffer less as well as be less vocal with it than one of a nervous temperament.

Nevertheless, I think the experienced observer either consciously or unconsciously elaborates a physical or mental scale by which he measures the degree of pain with some accuracy. The emotional nature of the individual, the surroundings of the patient, the desire for sympathy which exists in the presence of pain and is distinct from malinger or hysteria, the evident desire to impress the attendant with the gravity of the pain that prompt relief may be given, and other factors too minute for classification are unconsciously weighed. Then there is the undoubted expression of severe pain—face blanched, sweat standing on the forehead and the muscles strained, with sometimes a beseeching expression of the eyes almost like a dumb animal demanding relief.

There is also the reaction to associated

discomforts of known value that may be taken as an index. Many times I have elicited such severe and prolonged complaint from the slight prick of a hypodermic needle, overtowering and obscuring the original pain, as to show by comparison that the original pain could not be a severe one.

The elevation of the blood pressure and the dilatation of the pupils that accompany pain of moment are to be taken into consideration, at the same time realizing that these symptoms may be caused by other factors than pain; or inversely that you may have real pain when other factors are affecting the blood pressure and pupils in an opposite direction. During gastric and intestinal crises of tabes and lead colic a blood pressure of 170 to 210 is common, quickly subsiding to 120 when the attack is over.

Charecot⁷ long ago stated that generally the patients with the most active reflexes would give the loudest complaint.

Hartz⁸ says: "Complaint of severe and persistent pain in very young children is invariably genuine, and it becomes the most important symptom in early life."

Conversely, in many of the diseases suffered by the aged pain is not so severe as in younger persons.

In the upper abdomen the palm of the hand will cover an area containing the pyloric region, the duodenum, the head of the pancreas, the gall bladder and common duct and the hilum of the right kidney. These organs are the seats of diseases that give rise to pain as a most prominent symptom. It is largely by the reflections and radiations of pain that we are given a clue to the organ affected.

It is necessary to be familiar with the types and degrees of pain that diseases of these organs may cause.

Typically renal pain is lumbar, tending to radiate downward; gall-bladder pain is hypochondriac, tending to radiate to the right; duodenal pain is high epigastric; gastric pain is epigastric, tending occasionally to radiate to the left; pancreatic pain is low epigastric or central. As time goes on secondary changes occur in the way of spreading inflammation, fibrosis or neoplasm, and the type of pain becomes confused. Then

unobstructed inspection may be necessary to identify the viscus from which the symptom proceeds. Which only exemplifies that the earlier these cases are studied the easier the diagnosis as well as the greater the possibility of a cure.

Pain and tenderness that fail to show other cause are now all too frequently ascribed to kinks and pericolic membranes. While the importance of some of these variations—I should not say from the normal but rather from the type or average—is not to be underestimated, I think surgical pathologists do not attribute the importance to them that was customary a short time ago. While an unsuccessful exploration for the cause of a pain is very likely to terminate with the removal of some more or less exaggerated membrane, there is some uncertainty in the operator's mind as to whether it will remove the symptom. Deaver wisely says: "People's viscera differ as much or more than their faces and physiques."

In adhesions acquired through inflammation or the traumatisms of surgery we are very likely to have a history to help account for the pain and other symptoms. Even then I think there has long been a growing pessimism about their surgical removal unless accompanied by bowel obstruction or interference with function.

While speaking of the pain of post-operative adhesions we should mention the abdominal discomfort which not infrequently follows injury to nerves during operation, but which treated expectantly generally disappears with time.

Following operation, pain and the nature of the pain are our most reliable guides to any threatening condition; which is one of the most important reasons for the abolition of morphine at this critical time. When pain appears on the second or third day after an abdominal operation the diagnosis is often difficult but of the greatest importance. The pains of distension and obstruction are colicky and wave-like and associated with peristalsis; while those of peritonitis are more steady, diffuse and unremitting and not so definitely related to peristalsis. Peritonitis also causes marked tenderness which is less

marked or absent in obstruction or distension.

In the consideration of any pain we first automatically take note of the topography. To locate we should not accept such vague statements as pain in the stomach or pain in the liver, but should have the patient indicate on the bare skin the painful spot where that is possible. Very often this is not possible, and the patient prefers to indicate with the open hand or perhaps with both hands rather than the extended finger the actual point of pain. However, regarding tenderness as but a variety of pain, it may then be possible by manipulation to discover a more circumscribed area as having the maximum involvement. As a rule, it may be said that the focus where the pain is first developed indicates the neighborhood of the lesion. That there are exceptions to this statement is undoubted, as everyone would think of the pain of appendicitis first appearing in the epigastrium. But even in that case the tenderness over McBurney's point will indicate the location of the lesion.

The time of pain sometimes gives an indication as to its origin, as it may be associated with some definite hour of the day or some occurrence as its relation to the ingestion of food, when we may be able to locate the factor causing this regularity.

We have also to note the duration, and the steady, remittent or intermittent character of the pain. Naturally, a steady pain of maintained or increasing intensity would suggest an inflammation or compression, whereas the intermittent pain without tenderness would be more likely to accompany some functional derangement.

From the intensity of a pain we can predicate little, as a great pain may occur in one individual from the same origin as an easily bearable pain in another. Nevertheless, there are actions that invariably produce great pain in all individuals, as the spasm produced by the obstruction of an excretory duct whether it be bile duct or ureter.

While the nature of a pain as associated with some previous experience of a patient's when he had a similar pain or one that behaved in the same manner may be most enlightening, the ordinary adjectives as boring,

piercing, cutting, gnawing, etc., as used by a patient are only occasionally descriptive, and different patients would use the same term to describe an entirely different pain. Even as a familiar odor may be easily recognized but cannot be described except by comparison, so familiar pain seems to beggar description.

In making manual or digital pressure over the abdomen to locate tenderness it is always well to compare the two sides, as a natural sensitiveness to deep pressure may exist regardless of any lesion. In fact, some one has said that he who presses firmly enough into the abdomen in search of pain is sure to find it.

At any examination of the abdomen for rapid orientation one should consciously test the sensibility to pressure of the pylorus and gall-bladder, the three flexures of the colon, the epigastrium, the appendix and the hernial openings—these at least, regardless of the requirements of genito-urinary or gynecologic diagnosis.

The use of local anesthetics is strongly advised by Rudolph Schmidt⁹ in alimentary localization. Thus in the diagnosis by pain between gastric and duodenal ulcer he states that sixteen drops of a 1 per cent solution of cocaine administered by mouth will check the pain of gastric ulcer in about fifteen minutes. Should this be accomplished it would render duodenal ulcer quite improbable as a cause of the pain.

Abdominal pains accompanying menstruation are most naturally referred to the genital organs both by physician and patient and it is their variation from custom either in the amount, quality or location of the pain which may cause a physician to be consulted in numerous abdominal conditions which are not directly related to the genital organs but which are more likely to announce their attack during this time of lessened resistance.

To make a few rapid and broad statements concerning location of pathology as evidenced by the location of pain, I should say that epigastric pain occurs so frequently as evidence of a lesion in any other part of the abdomen or, as was so fully gone into by Dr. Greene in his address to this society at Pueblo several years ago, as evidence of a tho-

racic and particularly a cardiac lesion, as to be very indefinite as a guide except as connected with other symptoms.

Pain and tenderness below the right costal arch suggest disease of the gall-bladder or ducts, of the pylorus or the duodenum particularly ulcer, carcinoma or flatulence of the hepatic flexure of the colon, renal infarct, etc. They may also indicate disease of the appendix, or pleurisy, or pneumonia of the lower lobe; although pain of the first is usually lower and of the last two is usually higher.

In pain and tenderness below the left costal arch ulcer of the stomach, particularly of the middle region of the organ, should be excluded first, then intestinal carcinoma, lesions of the pancreas, disease of the spleen, and, if only tenderness, left-sided pleurisy.

When pain and tenderness are observed in the abdomen below the umbilicus, we must consider the possibility of enteroptosis and that the pain may come from organs normally situated above, as the kidney, stomach or gall-bladder; also that pelvic diseases of the urinary bladder, ovaries and extra-uterine pregnancy may develop upwards. In case of bilateral pain or tenderness in this region, ovarian and parametric affections should be regarded in women, and also conditions about the neighboring hernial openings.

Pain on the left side suggests the affections of the sigmoid flexure, including carcinoma, dysentery, membranous enteritis, volvulus, etc.

On the right side of this region we naturally think of lesions of the cecum and appendix, including tuberculous glands, ulcerations, perforation of typhoid ulcer and distension of the cecum from atony of the colon.

I realize that it would be only tedious for me to recount the many more obscure lesions in these regions that may be attended by pain or tenderness; or to attempt to describe didactically the numerous pressure points of pain and tenderness that have been specified about the abdomen by various authorities particularly the French, although many of these points are worth memorizing.

While the classification of pains as to their quality is almost without diagnostic value,

the pains of colic are very liable to be spoken of and recognized as colicky pains.

They are characterized by a gradual onset and subsidence, with a wave-like curve of intensity repeated, and a sensation of spasmodic contraction. Neuralgia is also subject sometimes to about the same intensity, and in abdominal neuralgia there may be considerable confusion. The spasmodic element in colic is likely to be the only difference in the pain, but there are other symptoms accompanying colic which are not germane to this subject but which easily clear the diagnosis.

The tendency of colic pains to occur at night is mentioned by Rudolph Schmidt¹⁰, who says that with the inactivity of striped or voluntary muscular fibres there is very likely to be increased activity of the smooth muscle fibres and that it would follow that the smooth muscle fibres would be in the ascendant at night. To this he attributes both the more frequent attacks of colic at the midnight hours and the general onset of labor at night.

We do not hear the term "appendicular colic" very frequently now. At one time it was assumed that the colicky pain of appendicitis was caused by inflammatory exudates within the appendix causing muscular contractions of the appendix, but similar pain occurs when the appendix is imbedded in inflammatory thickening and when distension of its lumen and contraction of its muscular walls are impossible. Probably in all cases the "appendicular colic" is really an intestinal colic perhaps due to partial obstruction or stasis but reflexly initiated in the appendix.

Richardson¹¹ has said: "Alone pain indicates danger in general; in combination with other signs it indicates danger in particular and guides the physician's hand to its source."

With our present light it is not possible to absolutely classify abdominal pain. However, a familiarity with such associations and differences as we can reasonably establish cannot but be of the greatest service to us, whether for the adoption of treatment by the internist or the pre-operative diagnosis of the surgeon.

While I see no probability near or remote that the surgeon can abandon the term exploratory from its association with laparotomy, the more that exploration is preceded by careful study of the possibilities or probabilities as to the nature of the proposed discovery and the more carefully the provisional sign posts leading into the unknown are investigated, the more success will attend the exploration.

While I would not for one moment detract from the acknowledged necessity and utility of the exploratory laparotomy, I do not think that our more modest but not less capable surgeons would hesitate to admit that even an exploratory laparotomy not infrequently fails to solve the cause of pain or other subjective symptoms. Certainly it sometimes could not do so unless the whole exposed economy could be subjected to the microscope and the laboratory. Under these circumstances the more definitely we have the point or points to be determined formulated by preliminary study of the symptoms the more probable is it that our exploratory laparotomy will arrive at definite and useful accomplishment.

This is the reason of this paper, for while I admit that abdominal or other pain is not the one most illuminating symptom in most cases, it sometimes occurs that it is the one and only symptom; and in all cases it is worthy of serious study and consideration.

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- ⁸Hartz. Optional quotation.
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The next examination for appointment in the Medical Corps of the Navy will be held on or about October 23, 1916, at Washington, D. C., Boston, Mass., New York, N. Y., Philadelphia, Pa., Norfolk, Va., Charleston, S. C., Great Lakes (Chicago), Ill., Mare Island, Cal., and Puget Sound, Wash.

THE TREATMENT OF UNUNITED FRACTURES BY THE USE OF BONE GRAFT.*

EDWARD F. DEAN, M.D., DENVER.

The treatment of ununited fractures has undergone many changes in the past few years, all kinds of mechanical appliances having been used with indifferent results. The solution of the problem leans at the present time to the "autogenous transplant". A number of questions concerning this new method still remain finally unanswered; first as to the type of splint, whether intramedullary or the inlay; second whether the transplant should be taken from the fractured bone itself or elsewhere in the body; third as to the advisability of leaving the periosteum on the graft; fourth what effect the use of metal retaining apparatus will have; fifth whether shortening can be overcome in the long bones by this method. The following five cases of non-union of the lower one-third of the shaft of the tibia were



Case 1, Plate 1. Lateral view showing transplant in situ shortly after operation, also bed from which transplant had been removed in the upper tibia.

*Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.



Case I, Plate 2. Lateral view one year later; transplant still in position; bony union not complete.



Case II, Plate 4. Final result seven months after insertion of transplant. Complete bony union, perfect function.



Case II, Plate 3. Shows position of bones after second operation; wire in situ, fibrous union.



Case III, Plate 5. Fibrous union of tibia with wire in situ at seat of fracture.

treated with a graft removed from another part of the fractured bone and inserted into the medullary canal. All the grafts in this series were removed with the chisel from the crest of the tibia below the tubercle, no wire or metal fixation appliances being used. These cases had been operated on previously, either for non-union or in an effort to reduce the fracture. Three of the cases were compound fractures, one having had two compound fractures in the same bone within a period of ten years.

Case 1.—J. G., aged 65 years. Cattleman, married, family history negative, denies venereal infection, formerly used alcohol to excess, but none for the past five years, always enjoyed good health. Ten years ago was injured in a runaway accident and sustained a compound fracture of the right tibia, upper third, made a good recovery with firm union. Present injury occurred three years ago, patient having been thrown from a horse, sustaining a compound fracture of lower third of the right tibia. He was operated on for non-union three times, wire and clamp being used, each time resulting in failure. On January 3rd, 1912, a bone graft was placed in the medullary canal, connecting the fractured ends of the bone and leaving a space of about one-half inch between the ends of the fractured bone, the graft being driven into the medullary canal of the upper end and then slipped into the canal of the lower end. The results in this case were not good as to firm union at the end of one year, and the final result can not be given as the patient passed from under my observation at that time.

Case 2.—T. R., aged 13 years. Never sick in his life. In September, 1911, while hanging on the back of a wagon, he slipped and caught his leg in the wheel, sustaining a compound fracture of the left tibia. He was operated on twice by Dr. W. B. Craig, silver wire being used the last time with failure of union. On January 29th, 1913, a graft was inserted in the same manner as case 1, with a perfect result.

Case 3.—S. P., aged 54 years. Carpenter, single, family history negative, denies any venereal infection, has drunk to excess all his life and still continues. In October, 1909,



Case III, Plate 6. Result seven months after insertion of transplant; small area on anterior surface in which there is no evidence of callus. Clinically a good result; patient working.



Case IV, Plate 7. Fracture of tibia and fibula; deformity and displacement of fragments before operation by Dr. Perkins.



Case IV, Plate 8. Anterior and lateral views of same leg several months after insertion of graft, with solid union; screw holes in fibula from former clamp operation.



Case V, Plate 10. Antero-posterior and lateral view of left tibia nine months after graft operation. Solid union of both bones with perfect function.



Case V, Plate 9. Antero-posterior view of left leg showing transplant in position in tibia.

fell off a bridge and broke both legs. Later both tibias were wired, and he left the hospital and followed his occupation till February, 1913, when he slipped and fell, fracturing the right tibia at the site of the former fracture, which showed faulty union. On February 20, 1913, a graft was placed in the medullary canal as in the above cases. Results good as to firm union, but bad as to function on account of stiff ankle.

Case 4.—O. E. T., aged 32 years. Grocer, married, never sick in his life, denies any venereal infection, family history negative. In January, 1913, while riding a motorcycle, he was struck by a street car and sustained a compound fracture of the lower third of the left tibia (later operated on by Dr. I. B. Perkins and clamp put on, with failure of union). Later a graft was inserted in the medullary canal, as in above cases, with perfect results.

Case 5.—W. S., boilermaker, aged 28 years. Always well, family history negative. On November 20, 1914, while playing football he received a fracture of the lower

third of the left tibia. He was operated on to reduce the fracture, with failure of union, and in January, 1915, a transplant was placed in the medullary canal, as in the above cases, except that the medullary canal was slotted laterally in the lower end to receive the end of the graft. The results were perfect.

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DISCUSSION.

William B. Craig, Denver: I wish to compliment Dr. Dean upon the clear and concise manner in which he has handled this subject. He could have gone on with an endless discussion of the pros and cons and not have arrived at anything like the conclusion that he has reached. He has in a brief manner enumerated the points of contention. I do not know any more about the subject than what I have derived from reading and observation of cases. One of my own cases he has reported, and a couple of his I had under observation in my service at the County Hospital succeeding his service. Avoiding as he did a needless discussion as to the older methods of treatment and mechanical appliances, he limits any discussion naturally to a certain phase or phases of the subject. I am glad he has, because the point of view of many surgeons present is probably very antagonistic to that which I may maintain or express. Suffice it to say, some are enamored of Lane plates, some of wire, and others of some external form of clamp, like the Freeman modification of the Parkhill clamp, which in my estimation is the best. However, I do not want to say that the Lane plate is a delusion and a snare, but it has proven so in my hands. In the hands of others it has proven absolutely a *sine qua non*.

As to the method of implantation, we recognize that the autogenous graft is the graft, and that it is probably as safely removed from the same member as from the opposite member. That is, you can take a graft below the site of fracture or above it in the tibia, according to the length and size of the graft necessary. It appears to me that it has been demonstrated by these lantern slides that there is no better and firmer method of fixation than the one Dr. Dean has adopted in all of his cases. He has bored a hole in the center of the bone and driven the graft in until it is fixed absolutely, and then with considerable force crowded the lower fragment upon the graft, so that it is immovably fixed. We should not have gone beyond such mechanical appliances as wire or nail if it were not for the fact they are a source of a great deal of menace and harm; that they retard union; that they furthermore invite infection, and are in every way inimical to repair, so that if you compromise with your judgment by nailing a graft to the bone, you may just as well

use wire, a Lane plate or a Freeman clamp. Implantation in the medullary canal is unquestionably the preferable method of fixation, and the inlay is not the most satisfactory method.

As to the retention of periosteum, that question is solved by the statement that in separating the periosteum you leave attached to the implant a number of osteoblasts which are the cause of the future regeneration of bone. This hardly looks to be true when on studying these skiagraphs you see that the implant enlarges in its entire circumference. But whether you have a piece of periosteum around is immaterial.

E. A. Johnson, Amarillo, Texas: Before reporting a case I had a few years ago, I should like to ask the essayist and those who have had experience in this line the question whether these grafts grow in length. We know the graft gets larger, but does it grow in length?

The case I want to report was that of a young lady, eighteen years of age, who had a severe type of osteomyelitis involving the left tibia. I finally removed the lower three-quarters of the tibia, and later there was a transplantation made about 13 or 14 inches long. The case did well. The tibia seemed to be as large as its fellow. The young lady is now having trouble from the fact that this graft has grown in length and has pushed the knee out, and has so disturbed the approximation of the joint that she cannot walk on that limb any more; otherwise she is doing well. I have not measured to see whether it has actually grown in length or not, but it occurs to me that it has and that it has caused this derangement of the joint.

O. M. Gilbert, Boulder: I am not competent to speak on this subject except to discuss one or two points that have occurred to me. I used to do fracture work in connection with minor surgery, and before I quit it, I had three cases of non-union, one of which was due to imperfect approximation. The other two cases were in men who were heavy drinkers, and I was much interested to hear Dr. Dean refer to two cases in particular in which he was unable to get perfect union after the use of the graft because the men were excessive indulgers in alcohol. I wonder if that point has been sufficiently emphasized. If it has, it is a protection in case we do not get union. In an old man seven or eight years ago, a fracture failed absolutely to unite, and although at the end of forty weeks it was found that the fragments were in perfect apposition, yet he never got more than cartilaginous union with a good deal of shortening.

Dr. Dean (closing): All I can say in answer to Dr. Johnson is that Dr. Childs and myself have observed these grafts through X-ray pictures, and we have not been able to say that the graft grows in length. We are both satisfied that it grows in diameter, but not in length.

Dr. Grant: Is it not a fact that the graft eventually disappears?

Dr. Dean: The last picture shows the graft after nine months and it is still present. We can still outline the graft.

The methods that are being used at the present time are those we have outlined, namely, the inlay, the intramedullary graft, etc. The latter has given a fair amount of success as well as the inlay. We have had some difficulty in getting the intramedullary graft in place at times, but we have found out that the easiest way to put it in was to slot one fragment. We have fitted the graft into the upper and slotted the lower medullary canal and pushed the graft into place.

THE CONTROL OF CANCER.*

FREDERIC W. BANCROFT, M.D.,
NEW YORK.

The etiology of cancer is still a mystery. Most investigators are agreed that carcinoma is not due to a germ; it has none of the characteristics of a bacterial disease. In infectious diseases, for instance, it is possible to inoculate an animal with the bacteria causing a given disease; the animal will then show definite symptoms of the disease, and at autopsy the characteristic pathological lesion will be found; the organism can be obtained from the circulating blood of the infected animal, and, in most instances, it may be grown on artificial media in a test tube.

In cancer, however, it is very difficult to inoculate animals. A cancer in a mouse, for instance, can rarely be inoculated into a rat or animal of any other species; to obtain satisfactory results it is necessary to inoculate a white mouse with a tumor from a white mouse. It is necessary to transplant whole cancer cells. Cancer cells ground up in a mortar will not grow. The microscopical picture shows always an unconfined, lawless growth of the cells normally occurring in any organ. Cancer of the breast shows a wild, unrestrained, irregular growth of the epithelium of the breast tissue, and so on.

Statistics from hospitals, boards of health, insurance companies, etc., have shown that cancer often follows chronic irritation or injury of an organ.

The examples are familiar to all who have read even the simplest accounts of the disease. Chimney-sweeps develop cancer of the skin from irritation by soot. Workers in tar distilleries, in the manufacture of grease, or briquettes, also seem especially subject to skin cancer. Something in tar and pitch under such continued exposure develops warts, which break down and become cancers. Men employed in dye works have been observed to suffer from cancer of the bladder. Cancer of the tongue from irritation by the pipe or cigar is commonly reported, and one physician recently described a case where the chafing of a suspender-buckle was assigned

as the cause. The women of India who carry betel-nuts in their cheeks suffer from cancer of the mouth, while generally speaking, they are quite free from other forms of the disease.

Women with myoma of the uterus are many times more susceptible to cancer of the body of the uterus than those without these tumors. According to the Mayo Clinic, 50 per cent. of carcinomata of the pelvis and calices of the kidney are associated with stone in the kidney. At least 20 per cent. of carcinomata of the sigmoid have their origin in diverticuli. Gallstones are found in at least 85 per cent. of all carcinomas of the gall bladder. Ulcer or some chronic irritation of the stomach antedates more than half of all gastric carcinomas. Even long-continued irritation is not always necessary, and cases are recorded where cancers seem clearly to have developed after a single blow or wound, or fracture of some bone.

A great deal is being done in various parts of the world to discover the etiology and cause of cancer.

First, there are the laboratories that are working to investigate the cause of cancer and to elaborate preventive or curative measures. I have taken the following list of them from Dr. Bainbridge's excellent book, "The Cancer Problem":

1. The Cancer Laboratory of the New York State Board of Health. Research Hospital of the State Institute for the Study of Malignant Diseases.

2. The Cancer Commission of Harvard University.

3. The German Committee for Cancer Research, with its various laboratories.

4. The International Association for Cancer Research.

5. The Cancer Research Laboratories of Middlesex Hospital.

6. The Imperial Cancer Research Fund of England.

7. The Brompton Cancer Hospital of London.

8. The Royal Cancer Hospital of Glasgow.

9. The Austrian Cancer Committee's Laboratory in Vienna.

10. Special Laboratories in Hamburg, Cologne and Leipsic.

*Read before the Medical Society of Essex County, New York.

11. The Laboratory of the St. Louis Cancer Hospital.

12. The George Crocker Special Research Fund of Columbia University.

13. The Institute for Cancer Research attached to the Charité Hospital of Berlin.

14. The French Association for the Study of Cancer.

15. The Research Department of the New York Skin and Cancer Hospital.

And a number of others.

This long list indicates the millions of dollars that have been spent and the endless hours of work that have been devoted to the search for the cause of cancer—and still we have not yet found it.

In the end, these millions of dollars and hours will have been well spent. But now the problem is too pressing, and we cannot wait for that great discovery which lies, we hope, in the not too distant future.

The purpose of the American Society for the Control of Cancer is not only to bring this important subject before the medical profession but also before the laity. Until some new method of therapy is discovered, surgery is the only treatment; and the success of surgery depends upon the early recognition of the disease. Large public meetings have been organized by the society in Chicago, St. Louis, Pittsburgh, Boston, Portland, New York and other cities.

The cooperation of the United States Census Bureau, state boards of health and individual physicians has been obtained in improving the reporting and publication of cancer statistics. Pamphlets and leaflets are being published and distributed in many cities and states, urging the possibility of lowering the cancer death rate. These are being distributed by hospitals, health boards, large commercial concerns, life insurance companies, out-patient dispensaries, municipalities and medical societies. Articles are being printed in daily and weekly papers and magazines. Lectures are being given before women's clubs, fraternal orders, young women's and young men's Christian associations, groups of midwives, nurses, settlement workers and others who are in a position to influence private and public opinion. Committees are being

formed to forward the work in all the larger cities; in a word, every thing is being done to get well under way the great human machine for the diffusion of knowledge that cancer is a curable disease and that people can be cured of it if only they will apply early for treatment; to spread abroad, as well, news of the hope that, with the cooperation of the public (and not without that cooperation) cancer may be made eventually a preventable disease.

Prevalence of Cancer.—Cancer is chiefly a disease of middle and adult life, and at these ages it is more to be dreaded than tuberculosis, pneumonia or diseases of the digestive system. In 1912, out of the total number of deaths from cancer in the United States, 84 per cent were of persons aged 45 and over. Cancer accounts for one-sixth of the deaths from all causes at the ages above 45. The mortality rises with age and shows a rate of 680 per 100,000 of population among persons aged 70 and over, as compared with 118 per 100,000 among persons in the forties. As is generally known, cancer is more common among women than men. At ages forty and over, of the women who die about one in eight, and of the men who die about one in fourteen, dies of cancer. The disease now takes an annual death toll of about 75,000 in the United States, and largely because of public ignorance and negligence it proves fatal in over 90 per cent of those attacked.

How are we to combat the alarming prevalence and terrific mortality of this disease? 1. We must educate the public to know that cancer is insidious in its origin; that it may be well advanced before there is any pain. How often have we heard the plea, "I felt a lump in my breast, but I did not worry about it as I did not feel any pain"? We must make the public go to their physicians in the pre-cancerous stage; all cases of chronic inflammation or irritation should be cured before they are the origin of a malignant growth. Allow me to give an illustration of what may be done by the education of the public. As you know, statistics show that everywhere cancer is on the increase. In the Prussian city of Königsberg, the mortality from cancer

increased from 53 per 100,000 of the population in 1880 to 110 in 1893, and the rate continued to increase until it reached a maximum of 139 in 1907. About 1900 Winter began an educational campaign similar to the present one of the American Society for the Prevention of Cancer. Slowly, very slowly, the effects began to show. The phenomenon, elsewhere so unusual, of a diminishing cancer death rate resulted, and in 1912 the figures had dropped to 118 per 100,000, due entirely to educational work by one man.

An account of another most interesting movement for public education in regard to cancer is given in the *British Medical Journal* for March 24, 1914, by Mr. Charles P. Clide, vice chairman of the health committee of the Town Council of Portsmouth, England. The council directed its health committee "to consider, in conjunction with the medical officer of health, any possible means of securing an earlier treatment of people suffering from cancer, and to report to the council at an early date". On October 28, 1913, the council adopted by an overwhelming majority three resolutions, the first of which called for a public meeting to which the nurses of Portsmouth and ladies interested in social, medical and charitable work should be invited, for the purpose of hearing a lecture on cancer, and initiating a system of education on the early signs of the disease, the possibility of its cure and the folly of delay in seeking medical advice. The second resolution ordered the free microscopic examination, under public auspices, of specimens submitted in connection with suspected cancer. The third resolution required the monthly publication in the local press of the following statement in regard to cancer. It reads:

"Borough of Portsmouth.

"The only cure for cancer at present known is its early and complete removal. Cancer, if removed early, has been proved conclusively to be a curable disease. If neglected, and not removed in its earliest form, it is practically invariably fatal".

They enumerated the following danger signals for cancer:

1. Cancer, in its early and curable stage,

gives rise to no pain or symptoms of ill health whatever.

2. Nevertheless, in its commonest situations, the signs of it in its early stages are conspicuously manifest.

3. In case of any swelling occurring in the breast of a woman over forty years of age, a medical man should be consulted at once. A large proportion of such swellings are cancerous.

4. Any bleeding, however trivial, occurring after the change of life, means almost invariably cancer, and cancer which is then curable. If neglected until pain occurs, it means cancer which is almost always incurable.

5. Any irregular bleeding occurring at the change of life should invariably be submitted to a doctor's investigation. It is not the natural method of the onset of the change of life, and in a large number of cases means commencing cancer.

6. Any wart or sore occurring on the lower lip in a man after 45 years of age is almost certainly cancer. If removed at once the cure is certain, if neglected the result is almost inevitably fatal.

7. Any sore or swelling occurring on the tongue or inside the mouth in a man after 45 years of age should be submitted to investigation without a moment's delay, and the decision at once arrived at by an expert microscopical examination whether it is cancer or not. A very large proportion of such sores or swellings occurring at this time of life are cancer, and if neglected for even a few weeks the result is almost inevitably fatal. If removed at once the prospect of cure is good.

8. Any bleeding from the bowel occurring after 45 years of age, commonly supposed by the public to be due to "piles", should be submitted to investigation at once. A large proportion of such cases are cancer, which at this stage is perfectly curable.

9. When warts, moles, or other growths on the skin are exposed to constant irritation they should be immediately removed. A large number of them, if neglected, terminate in cancer.

10. It is desirable that rooms occupied by

a person suffering from cancer should be cleaned and disinfected from time to time.

Unfortunately the medical profession is not free from blame in regard to the early diagnosis of cancer. Two main sources of error are largely responsible: either the physician fails to make a careful examination and entirely overlooks the early growth, or he is not willing to refer the patient to a surgeon until he has gone through a long diagnostic formula, which may involve sufficient delay to lessen the patient's chance of recovery. This is particularly true of cancer of the stomach, where if one waits until a palpable tumor is present, much harm has been done. As a surgeon I have often seen a too conscientious physician hesitate to recommend exploratory laparotomy until it was too late to promise any hope of eventual cure.

Delayed Surgery.—It is well known to the medical profession that the greater number of patients with cancer of the stomach come to their physicians describing symptoms which they have had from one to three years. A surgeon of large practice, possessed of curiosity in this matter, recently studied his own case records and those of five large New York hospitals, with a view to learning how early or how late cancer patients came to the surgeon, and what proportion of surgical patients had cancer. Taking approximately the last 2,000 cases in each of the six sets of records, he found in all 542 instances of cancer in 12,345 patients, one in every twenty-two, or 4.39 per cent of cancer cases. In his own practice he found eighty-six cases of malignancy in his last 2,000 patients. Studying more closely the records of sixty-five of these who had come for their first operation, he found the following answer to his first question:

After discovery of a tumor, or after the first suspicious symptoms, the thirty-five men had waited on an average 12.2 months before consulting the surgeon, and the thirty women 11.9 months, a difference of but nine days.

His conclusion was that neither sex could claim satisfaction in these figures at the expense of the other, showing as they did an almost equal lack of wisdom in the delay

of a year in a matter so vitally important.

In order to determine as nearly as possible the average condition of cancer patients at the time they apply for operation, the Pennsylvania Cancer Commission obtained reports from the surgeons in different parts of the state giving data of cancer cases at the time they came to these surgeons for operation. In all, statistics were collected on 400 cases and the results when tabulated were somewhat startling. In the first place, these figures showed that in superficial cancers the patients had noticed the first sign of the disease an average of one year and two months before coming to operation. It is evident that, in most cases at least, the patient suffered from these symptoms of cancerous disease for fourteen and eighteen months respectively, solely on account of ignorance of what these symptoms meant. There is no doubt that a large number of these patients would have applied for operation immediately if they had not been entirely ignorant of the serious nature of their disease. This ignorance on the part of the general public is one thing that the Commission is trying to combat in ways noted below.

The tables contained in the Commission's report also show that in about one-half of all cancer cases, superficial and deep alike, there has been some form of chronic irritation or precancerous condition, such as ulcers, uterine tears, etc. So that one-half of the cases that apply to Pennsylvania surgeons need not have ever had a cancer if they had known the significance of this precancerous condition and had had it remedied before a cancer developed. The Cancer Commission's figures also indicate very clearly the present attitude of the medical profession concerning cancer. In the superficial cancers the patient's physician had known of the condition present for an average of one year before the patient came to operation, and in deep seated cancers the patient's physician had known of the condition for an average of thirteen months.

It is evident, therefore, that another important part of the work of the Cancer Commission was to stimulate the interest of the medical profession concerning cancer, and to

try to arouse the interest of physicians, so that when a patient first applied with signs of early cancer, the proper treatment should be insisted upon at once. The goal at which the Commission aims is to interest the profession so that there will never be any delay after the cases come into the physician's hands, instead of there being a delay of over a year, as is usual at the present time.

The Pennsylvania Commission believes that cancer mortality will diminish in exact proportion to the general education of the people. It is true that many cases never go to the physician at all until the incurable stage has been reached. As Moynihan says: "People neglect the signs pointing to the necessity of immediate intervention and apply for help only on the appearance of the signs of impending death". As Childe says, people will run to a dentist with a toothache much more quickly than they will run to a physician on account of symptoms pointing to a malady which, if neglected, will prove fatal. Emphasis must also be laid upon the fact that pain and impairment of the general health are symptoms of the later stage only. Many a woman says, "I thought my trouble could not be cancer, because I felt perfectly well and I did not have any pain".

Dr. Gibson, Professor of Surgery at Cornell, read an excellent paper on this subject recently in New York. In it he analyzed the condition and course of 110 cases treated in the New York Hospital from February, 1913, to April, 1915. Basing his classification upon the conviction that the majority of cancers are for some time purely localized, and at that time curable, he stated that, on account of the advanced condition of the disease, only eleven could be promised a reasonable expectancy of cure; six were doubtful, and ninety-three (84.5 per cent of the whole) offered no probability of cure whatever.

In the last twenty-eight consecutive cases, where special efforts were made to obtain details of the opinion or advice received by these patients from the first doctor consulted, the evidence showed conclusively (Gibson says) that at least 50 per cent of them had received no treatment or advice

based on recognition (or suspicion) of their condition.

As illustrating this fact he cites a number of cases, stating the ridiculous treatment they had received. "This deplorable percentage of hopeless cases," says Gibson, "coupled with the investigation of the kind of advice given many of these unfortunates, justifies me, I believe, in accusing our profession as responsible for a large proportion, perhaps the majority of lost opportunities successfully to treat probable curable conditions".

"You are justified in asking me to outline", he continues, "how I propose to inaugurate and carry out such a revolution. We should study and keep ever in mind such statistics as are furnished by Mr. Hoffman of the American Society for the Control of Cancer, and remember that a considerable proportion of human beings of medium or mature life suffers and is destined to die from cancer. We must bear in mind the frequency of cancer in certain organs, such as the breast, uterus and stomach. The profession must realize that the cancer question is today the big problem, and the most serious of all unsettled questions; that, so far, we have made little or no headway against it; that success can only be hoped for in the adoption of new and more radical methods." "The present application," he continues, "of these revolutionary principles will be three-fold:

1. Recognition and cure of precancerous conditions.

2. Throwing overboard all classical diagnostic formulae; e. g., cancer of the stomach, recognized by great emaciation, pyloric obstruction, palpable tumor, and cachexia. These are terminal symptoms and consequently useless.

3. The recognition that many conditions cannot be diagnosed in the curable stage (with any frequency) save by unusual methods. These procedures, such as exploratory laparotomy, should hereafter be classed, not as extraordinary, but as legitimate measures of prudent anticipation."

Common locations of cancer: Cancer of the breast—In reviewing the last twenty-two cases of carcinoma of the breast at the

New York Hospital, I found one or two rather interesting facts. The length of time from the detection of the tumor until the patient appeared at the hospital varied from nine years to one month. The average was eighteen months. Three cases out of the twenty-two had noticed the tumor for a considerable length of time, nine years, seven years and five years, respectively. This shows pretty conclusively that cancer often springs from a benign tumor; three out of twenty-two is about 15 per cent. Omitting these three cases, the average length of time of the nineteen remaining cases was eight months. Only five out of twenty-two complained of pain on admission to the hospital. Thirteen of the twenty-two cases had enlarged axillary glands that proved to be involved on microscopical examination. Reliable statistics show that 10 per cent of cases of cystic degeneration of the breast become malignant.

Bloodgood's figures are most instructive. In early adeno-carcinoma of the breast, the most benign type of breast cancer, ten cases are cured out of ten. In the latter stages six out of ten cases are cured. In scirrhus carcinoma, fifteen out of twenty early cases are cured; in late cases only six out of twenty, about 30 per cent; cancer of the tongue, early cases, 100 per cent; late cases, 33 per cent.

In cancer of the stomach there is one bright ray of hope for early diagnosis—the X-ray. With the use of the bismuth meal, the contour of the stomach can be seen. It can be shown whether peristalsis is normal, and if there is any retention of stomach contents after a certain period of time. The Mayos claim that the diagnosis can be made in 93 per cent of the cases.

Cancer of the Rectum: William Mayo states that 15 per cent of cases coming to the Mayo Clinic have recently been operated upon for hemorrhoids. This should impress upon all of us the necessity of making a rectal examination and, if possible, a sigmoidoscopic examination of all cases of hemorrhoids, and in cases where there is constipation and passage of blood at stool. The X-ray is here of great assistance in diagnosis.

Cancer of the uterus: Any irregular

bleeding at the menopause should be investigated. After the menopause, any vaginal bleeding or leucorrhea tinged with blood, especially if offensive in odor, should be investigated by a most thorough vaginal examination. One-quarter of all cancers in women are of the uterus.

Bloodgood is strongly opposed to removing a section for diagnosis and then performing a second operation at a later time for complete removal of the growth. His statistics are most instructive. Forty-five cases of complete amputation of the breast for early carcinoma showed 80 per cent cures five years after operation. He then took records of forty-five cases of two-stage operations. In twenty cases the lump only was removed for diagnosis, and then some days later a complete operation was performed. Of these cases, not one was living at the end of five years. Of fifteen cases where the breast only was removed, and later a complete operation was done, only two cases were living and free from recurrence at the end of five years.

Thus the figures show that in forty-five cases of early cancer of the breast, in which the probability of a cure would have been 80 per cent if complete excision had been done at the primary operation, only two cases were living at the end of five years; or less than 5 per cent.

The Mayos strongly advise against futile operation in the late stages of cancer; or palliative operations when the relief to be gained is small. They say the friends of the patient are told that he died as the result of the operation, or they see him die a lingering, horrible death which is blamed upon the operation. It is better that he should go home and tell his family and friends that it is too late for operation; then the suffering and death will leave no such confusion in the minds of the people in the neighborhood. They see just what the disease has done; and from that neighborhood patients will come early, in contradistinction to the hopeless patients with inoperable disease who drift in from communities where tardy or palliative operations have been the practice.

In conclusion, let me quote a paragraph

lately sent out by the Postal Life Insurance Company to its industrial policy holders. To all of us its admonition is far from valueless. It says: "While awaiting the oft-heralded, but as yet elusive, cancer cure, give the surgeon a chance to cut the cancer death rate in half; he can do it."

8 E. 54th Street.

INFANTILE HYGIENE DURING THE PRE-SCHOOL AGE.

KATE LINDSAY, M.D., BOULDER.

The vital statistics on infantile mortality of the registration areas of the United States for 1811 give 112.9 per 1000 of infants under one year of age, or eight times the death rate at all other ages. The death rate from one to four years was about one-tenth that of children under one year. The death rate of children in the first five years of life was ten times that of children in the second five years, and greater than in any age group except that from sixty-five to seventy-four years.

Now, infancy and early childhood is not only the age of greatest mortality, but also the age when the foundations of many chronic diseases, both infectious and organic, are laid and the child thereby doomed to grow up a cripple for life and unable to withstand the mental, moral and physical strain of existence. As there is no specific known to the medical profession at present for most of these diseases, if infantile mortality is ever reduced or crippling by disease in after life lessened, it must be by improving the hygienic management and environment of children, especially during the pre-school period of existence.

It is an extremely wasteful policy to wait until the children go to school before looking after the eyes, ears, throats, noses, teeth, skin and mental capacity, while abnormal conditions are being fostered and developed by improper home treatment. The teacher is expected to send home the child suspected of having a communicable disease to safeguard the other school children from exposure to the infection. The orphanage or other

public institution must isolate the sick to prevent exposing others to infection. But the helpless babe in the home has no safeguard, unless the intelligence of the parents or caretakers leads them to quarantine the sick member of the family, which is seldom done. The ten-year-old boy sent home from school ill with scarlet fever of a mild type, mingles freely with his little brothers and sisters under school age. They take the disease in a severe or malignant form and either die or are left with some troublesome sequela which entails impairment of health in after life.

Truly, at present the child life in the home is the least carefully guarded by sanitary regulation. In fact we may say there is no code of rules or regulations for home sanitation, although the home is the place above all others where preventive measures, rationally applied, would decrease premature death and the inefficiency produced by diseases in after life. Not much success is ever had in combating disease and conserving human life, unless the causes of disease can be ascertained and removed. The Panama Canal would never have been built unless a Gorgas had first cleared the canal zone of the mosquitoes which propagate yellow fever and malaria, and what is needed is some equally talented physician and scientist to take firm hold of the sanitation of early life and study persistently the causes of the enormous infantile mortality, and how to remove these causes and conserve the lives of the children; not only in the slums, but in the average American home, whether rural, urban or suburban. That one cause of the high infantile mortality is lack of ability or willingness on the part of the mothers to nurse the babes for the first year of life is shown by the statistics of different countries. Those of Berlin, Prussia, are considered the most reliable, and there 7.09 per cent of the breast-fed babies die of digestive disorders in the first year and 38.6 of the bottle-fed during the same period. So one measure of hygiene and toward the conservation of life and health is to provide healthy mothers capable of nursing their infants for the first nine to twelve months of life. The time is past when the physician or laboratory experimenter

*Read before the Boulder County Medical Society, April 6, 1916.

expects to produce a substitute for mother's milk by any compounding or mixing which gives the same amount of protein fats and carbohydrates as the natural food, and by feeding the food in quantities to meet the caloric demands of the infant for the first year of life. Healthy human milk is a complex fluid food containing besides the nutritious element many antibodies and enzymes and other elements that young humanity needs not only to insure perfect growth and development of bone muscle and nerves, but to increase the vital resistance and immunity to disease. Thus a foundation is laid on which the child may grow up to a life of efficiency, and be a bulwark of mental, moral and physical strength to the nation.

In a recent number of the weekly *Great Divide* is the picture of a sow with her litter of five pigs, each worth \$500; while the economic value of the human baby is estimated at \$90. These pigs and their mother have every growth-promoting agent provided for them, even to bath tubs. No painstaking or expense is spared to insure life and health to the swine. This decision of the comparative money value of babies and prize pigs has been reached by no less an authority than Professor Irwin Fisher, of Yale College. The prize pigs show the result of proper breeding and suitable care after birth. The human baby's comparative cheapness is the result of haphazard methods of propagating and caring for humanity in the foremost nation of the earth and in the second decade of the twentieth century. The pig is said to love to wallow in the mire, yet breeders of fancy pigs find it to their interest to provide bath tubs for their hogs and to keep the pigs and their mothers clean. How is it with the average baby and young child? Much of the dangerous dirt with which the infant comes in contact is human excrement. The young infant is helpless to move away from the discharges of its own body; in this respect more helpless than any young animal. Yet how often it is allowed to lie in garments soiled with feces and urine, or these garments taken off, dried and put on again. Not long ago the writer was in the home of a fairly well-to-do family when the little three-year-old girl, who had

had an accident, was hung over a stool with her skirts turned up to dry before the stove. The mother had never thought what effect the reabsorption of stale urine might have on the health of the child. Night after night the little ones sleep in foul beds, saturated with urine and only dried, never washed from one year's end to another, filling the room air, night and day, with impurities.

We need the gospel of cleanliness preached to those who have the care of helpless young humanity. We may realize what a number of insanitary gnats are strained at and what a number of insanitary camels are swallowed, if we consider the dirty things the baby puts in its mouth and the amount of dirt it swallows. Taking care to secure the best certified milk, being careful about bottles, nipples and all other utensils used in feeding the infant, will avail but little if the child is given a dirty pacifier and set down on the floor to wipe up all the dirt that will cling to the damp rubber, then to wash this foulness off in its mouth and to swallow the worm ova, bacteria or any other micro-organisms that may cling to the pacifier's moist surface. If we drop our fork or spoon on the floor we exchange it for another, and consider the dry metal contaminated by the surface of the floor. Foul food, foul air and pacifier sucking result in oral and nasal deformities, enlarged tonsils, adenoids, infected nasal cavities, mouth breathing and dental and alveolar disease, furnishing work for an army of specialists, the otologist, rhinologist, odontologist, throat specialist, dentist and ophthalmologist to cure disorders which proper home hygiene might have prevented before the child was sent to school. After the patient's health has been seriously impaired the best these wise men can do is to patch up the disordered organism. Most infectious communicable diseases come from without, and the micro-organisms which are the active causes of these disorders often find an entrance into the human tissues and blood and lymph streams through breaks in mucous membranes. The healthy normal secretions of a sound mouth and nose will destroy most bacteria before they reach the pharynx. But a sore mouth, full of ulcerated, decayed teeth with alveolar abscesses,

will result in glandular infection of the neck by the tubercle bacillus and other germs.

Rheumatism, a rather common disorder in early life, is often the result of alveolar abscesses, diseased tonsils or other focal infections.

For the sake of the later health of the patient, the dentist should take special care of the infantile mouth structures and do his best work to conserve the milk teeth; likewise the other specialists should bring their best work to bear on the child from birth up to the seventh year, when school life begins; thus not only preventing chronic diseases, but increasing the child's immunity from communicable diseases in later years.

The child allowed to lie with pelvis wrapped in foul napkins is liable to genito-urinary infection by way of the rectum, vagina, urethra, and the veins and the lymphatics. Colon bacilli often infect the kidneys, causing pyelitis, especially in female children. Abt, of Chicago, in an article printed in the Practical Medicine Series cites a goodly number of such cases both in his hospital and private practice. The heat, moisture, and organic matter furnish ideal culture conditions for all infectious organisms. Chafing results, and the groin glands become infected. The orifices of the body need to be especially guarded if the entrance of infections into the body is to be prevented. Here is a special work for the trained nurse, to instruct mothers how to care for their children and keep them clean and sanitary.

Then the baby needs to have its skin properly cared for by bathing and keeping it free from the irritation of insect bites, as mosquitoes, gnats, flies, bedbugs, fleas, and lice. If the thickened cuticles of the colored workmen of the anal zone need protection from insect bites, surely the sensitive skins of American infants need to be saved from the irritation and blood infection which these troublesome insects may inject into the structures of the body.

Child life in the first year of existence is principally manifested by muscular activity. The hands and feet of a healthy infant are continually in motion when the baby is awake, seeking to reach and grasp what seems to be attainable, with no other reason

for these efforts than the automatic endeavor to get hold of the object in sight. Exercise is what the muscles need to develop them for work later on. Mother, nurse and nature are working adversely to each other, so the infant is tied in a high-chair, strapped to a perambulator, or restrained in a padded pen—all measures serving to hinder muscular action and thwart nature in her efforts to develop the young body into an efficient, dependable, working machine. "Well", says the mother, "the floor is insanitary and full of cold drafts and baby will get into mischief and injure himself unless restrained"; which is true. But why not build him a pen big enough to give him room to exercise in, say six feet wide, ten or fifteen feet or more long, raised high enough to be above floor, cold drafts, etc., with a firm, easily cleaned base which will not hinder locomotion. If any one wants to test the hindrance to action of a padded floor, or the blanket or quilt, let him try walking backward and forward on his bed. This exercise pen could be portable and adjustable. It would give the young pilgrim a chance to creep and learn to walk of his own volition in a clean, sanitary environment. As the child grows older in the warm season he should have the freedom of a clean, sanitary yard with a fresh, clean, well-kept grass mat over the surface; care being taken to keep all animals off the ground and about the use of fertilizers, so as to lessen the danger from ground infection by the ingestion of worm ova and bacteria, or of being infected through the skin by parasites like the hookworm or by microbes such as the tetanus bacillus.

Surely it is worth while to try to improve the health status of the human baby, so that its value will at least rise from \$90 to \$500, the price of a prize pig. The poet Goldsmith says that "Ill fares the land to hastening ills a prey, where wealth accumulates and men decay". Surely it is in no better plight where a newborn pig is worth \$500 and a newborn baby only \$90.

The child in the home must be protected as well as the child in the orphanage from infection by other members of the family and outsiders; its sanitary requirements

must be met and care taken to give it a chance to grow into perfect manhood or womanhood. Parents must be educated in these matters. The architect must plan and the builder construct homes favorable for child culture and child hygiene. Just as the barns and stock yards of the up-to-date breeders are built with reference to the requirements for producing prize animals, so should the home and its environments be made to meet the health requirements of infants and growing children. The country home and the farm are often looked upon as the ideal place to rear children in, and no doubt they have many advantages over the city tenement apartment. But in the city the water supply is often better and the scavenger carries away the solid garbage, while the fluid wastes are borne down the sewerage pipes. Meanwhile, around the farm home year after year the house lot becomes more foul from the accumulation of human and animal excrement, garbage and straw, and other organic decaying matter which renders the environment unfit for the proper growth and development of children or adults; and this may be the predisposing cause of much of the sickness of the farmer and his wife and children.

Considering the time of life when infection is most common, we find that tuberculosis is most frequently contracted under 4 years of age. Whooping cough, measles, scarlet fever, diphtheria and all of what are known as children's diseases are most easily acquired, as well as most deadly, during the first five years of life, and are especially virulent in the first and second years of life. Many organic lesions of the heart are the result of rheumatic infection in infancy and early childhood. Gastro-enteroptosis, and all the long list of deformities requiring the skill and art of the orthopedist to correct them, are usually started in the first years after birth. Yet the hygienic and prophylactic treatment of children before the school age is still almost entirely ignored. Two important facts to remember are that few infants are born infected. Therefore the fact that so many develop infectious disorders in early life indicates faulty environment. The inherited resistance of the infant organism

to the destructive effects of these infections, together with the child's sanitary environment, determines to a marked extent whether it grows up healthful, or lives on more or less disabled in the battle for life, or gives up early in the struggle for existence. The bodily salvation of these helpless little ones calls for the wise application of both the science and art of hygiene.

RECORDS OF THE PLAGUE.

WILLIAM H. CRISP, M.D., OPH.D. (COLO.)
DENVER.

(Continued from Page 255.)

A curious belief of the Middle Ages attributed the disease to the work of "anointers." The part played by this belief at the time of the Milan plague is well described by Manzoni. Every human belief has had its origin in some primary fact or group of facts, no matter how ridiculous the connection between cause and consequence; and several events seem to have conspired to establish the "anointing" theory in the minds of the people of Milan. In the first place some one was seen anointing or perfuming a wooden partition in the cathedral. Popular rumor concerning this incident grew so busy that, although the cathedral authorities could find no trace of poison on the wood work, yet to please the populace, they weakly consented, "as an act of precaution", to have the partition washed.

On the following morning some practical jokers, or, it may be some who maliciously desired to create a panic, had daubed whitish or yellowish paint on the walls and doors of many houses. The city was suddenly plunged into confusion. The owners of the tainted houses smoked the decorated areas with burning straw, while the passers-by looked on in horror and trembling. The infection was thenceforth persistently explained as due to some exquisite poison, of instantaneous and most penetrating power, and composed of toads, serpents, saliva and matter from the plague-stricken, and every vile thing which wild and distorted imaginations could conceive.

It was inevitable that such beliefs should fasten sooner or later on human victims. An

octogenarian who ventured to dust his seat in church before sitting down was seized by the hair, overwhelmed with blows and dragged through the streets. Three foreigners who stopped to admire some detail of the cathedral architecture and rashly touched the marble with their hands were surrounded by an angry crowd and dragged to the Palace of Justice, which, fortunately for the strangers, was not far off. With minds thus prepossessed, it is not strange that delirious patients were ready to confess themselves guilty of "anointing"; and thus the vicious circle of superstition was maintained. Even physicians offered in proof of the "anointment" theory confessions received from the lips of dying patients.

Among the fantastic stories circulated was one of a citizen who had been tempted to enter a carriage with a "grand personage with dark and fiery face, flaming eyes, bristling hair and menacing lips". The victim was whisked away to a great palace, where he was offered fabulous riches on condition that he would also accept a box of ointment with which to anoint the city. Not consenting, he found himself again, "in the twinkling of an eye", at the point from which he had started.

According to Manzoni, the same superstition has been traced in connection with the plague at Palermo in 1526; at Geneva in 1530, 1545 and 1574; at Padua in 1555; and at Turin in 1599 and 1630.

Death came so swiftly to plague patients that there is a dearth of advice as to the treatment of the disease. The literature abounds rather in directions for prevention of the plague than for its cure. To the individual, running away seemed no doubt to offer the best prospect of escape. The series of tales known as the *Decameron* is told by ten imaginary personages, three young men and seven young women, who retired from Florence to the country in order to avoid both the dangers and the horrors of the plague. In London the "richer sort of people", "especially the nobility and gentry", says Defoe, "thronged out of town". In the month of June the Court removed to Oxford, "where the distemper did not so much as touch them". But no one was al-

lowed to pass through towns on the road, or to lodge in any inn without having obtained passes and certificates of health from the Lord Mayor.

As the plague increased, each man was disposed to shun his fellows. Those country people who had gained their living by bringing provisions for sale to the London markets were forbidden to come within the city limits, because of the danger arising in any concourse of people. They therefore developed the practice of laying their provisions on the ground at the boundaries, where those who needed took them and left money in exchange.

The Lord Mayor and other magistrates of the City of London published stringent regulations for the closing of plague-infected houses, or houses in which lived persons who had visited plague patients. This order was severely criticized, of course inflicted hardship on some who were not already infected, and was often evaded. Several such evasions, perhaps typical rather than actual, are described by Defoe in the *Journal*. The closed houses were guarded by watchmen according to the following order: "That to every infected house there be appointed two watchmen, one for every day and the other for the night, and that these watchmen have a special care that no person go in or out of such infected houses whereof they have the charge, upon pain of severe punishment . . . and if the watchman be sent upon any business, to lock up the house and take the key with him". The watchmen were often bribed. Defoe mentions that three of them "were publicly whipped through the streets for suffering people to go out of houses shut up".

If some god had ordained the visitation of the plague, it was only natural that prayers should be offered for his forgiveness and the lifting of the curse from the face of the land. Not every ruler has shown the logic of Lord Palmerston, who, when asked by the Scotch clergy to appoint a fast day to ward off the cholera, bade them go home and clean their streets. While the court of the profligate Charles the Second rioted at Oxford, the government encouraged the people of London to attend public prayers and observe days of fasting and humiliation.

In Milan the decurions importuned the cardinal archbishop to plan a solemn procession. The astute churchman refused. For one thing he feared that if the plague were to continue, the religious faith of the people might be destroyed. If there were "anointers" the procession would furnish a splendid occasion for their misdeeds. If their existence were a fiction of the imagination, the prelate very sensibly argued that the mere concourse of a vast multitude would favor the spread of the disease.

At a later date his resistance was overcome, and the body of Saint Charles was borne through every quarter of the city at the head of a vast throng of superstitious worshippers. Within the next twenty-four hours the number of deaths was suddenly and enormously increased. Yet, says Manzoni, such was the popular prejudice that this fact was commonly attributed "not to the coming together of so many persons, and for so much time, not to the infinite multiplication of fortuitous contacts; but to the facility with which the anointers had been able to carry out on a large scale their inhuman designs".

From modern bacteriology we know that the danger from disease is by no means always in proportion to the badness of the smell. We no longer attribute typhoid to the stench from sewers or drains. But from the time of Hippocrates, who is alleged by Galen to have overcome the plague by burning aromatics, the belief in the therapeutic power of agreeable odors endured for more than two thousand years. In Florence, according to Boccaccio, those who neither dissipated, nor fasted and remained within doors, were accustomed to walk through the streets carrying, "some flowers, some fragrant herbs, and some various kinds of spices, often applying them to their noses, esteeming it an excellent thing to fortify the brain with such odors."

Defoe tells of an under-sexton or gravedigger who, in spite of his gruesome occupation, escaped the plague, although he "never used any preservative against the infection, other than holding garlic and rue in his mouth, and smoking tobacco. . . . His wife's remedy was washing her head in vin-

egar, and sprinkling her headcloths so with vinegar, as to keep them always moist; and if the smell of any of those she waited on was more than ordinary offensive, she snuffed vinegar up her nose, . . . and held a handkerchief wetted with vinegar to her mouth". The money used in buying and selling the necessities of life was handled with tongs and dipped in vinegar.

A Florentine document of the fourteenth century contains some quaint instructions to physicians for the avoidance of the plague infection. If the house of the patient has no court or other broad open air space, they are to arrange to have the urinal brought out into the street. The urine flask is to be held up to the light by the friends of the sick person. The physician is only to enter the patient's room when it has had a thorough airing. Contact with the bedclothes is to be avoided, and these are to be changed once daily. It is advised to sprinkle the sick room with rose water and vinegar, and to place in the room plants with pleasant odors. The physician is also to carry pleasant-smelling substances with him constantly, and in entering a sick room is to keep before his mouth a sponge soaked in vinegar and rose water.

In the years 1527 and 1528 the city of Wittenberg in Prussian Saxony was attacked by the plague. In 1527 the University was transferred to Jena until such time as the plague should have left. Luther stayed in Wittenberg, "boldly trusting in God," and his powerful hymn, "Ein feste Burg ist unser Gott" was probably written at the end of 1527 under the stress of the time. The neighboring city of Magdeburg was not attacked by the plague at this time; but the Magdeburg city fathers issued directions against the plague, in which they declared that the disease attacked rather those whose bodies were filled with a superfluity of putrid humor, than those who were of a good regimen. People were to smoke their houses evening and morning with various herbs, and to chew specified herbs (inula, potentilla, marjoram, etc.) when on the street. Above all things no fruit was to be eaten with meals. If anyone who had followed the directions were attacked by the plague, "which God forbid",

he was to be bled in one or other vein of the arm.

"Neither medical counsel", says Boeacccio, "nor the virtue of any medicine seemed to avail or profit in this disease". Among the measures vainly employed were the lancining and poulticing of buboes; the use of tonics in debilitated persons, of styptics in those of lymphatic temperament, and of bleeding for the plethora; and the giving of antidotes, naphthas, and emetics. The antidotes included mineral acids, cold and iced water, oil frictions, quinine, and medicated treacles. In the Russian epidemic of 1771, Somoilowitz actually ventured to inoculate the disease.

The control of epidemics must have been rendered more difficult by the impossibility of properly disposing of the dead. In Athens, according to Thucydides, "the dead lay as they had died, one upon another, while others hardly alive wallowed in the streets and crawled about every fountain craving for water". Many used the burial places of others; so that "when one man had raised a funeral pile, others would come and, throwing on their dead first, set fire to it".

In Florence the common custom of a large funeral following gave place, says Boeacccio, to a lonely interment at the hands of a few clergy. Often when the priests started out to bury one body, they reached the cemetery with six or seven. The usual burial places were insufficient to accommodate the multitude of bodies brought to the churches, so that it was necessary to dig huge pits, into which the corpses were thrown by the hundred.

The same was true in the London plague, where into one immense pit were thrown, in the course of exactly two weeks, no less than 1,114 bodies. At this time the corpses had reached to within six feet of the surface; and, this being the limit of depth required in the regulations published by the London magistrates, the pit was closed. Defoe thus describes the unloading of one of the carts in which the dead were bundled to the grave: "The cart had in it sixteen or seventeen bodies; some were wrapped up in linen sheets, some in rugs, some little other than naked, or so loose, that what covering they had, fell quite from them in the shooting out of the

cart, and they fell quite naked among the rest. . . . They were . . . huddled together into the common grave of mankind, as we may call it; for here was no difference made, but poor and rich went together . . . Coffins were not to be had".

Although the narratives of Boeacccio and Manzoni credit the clergy of Florence and Milan with remaining faithfully at their posts during the epidemic, in London physicians and ministers alike appear to have sought safety in flight. All the physicians of the Royal College of Physicians, led by their president, fled the city. Probably not more than twenty-five physicians remained to fight the plague.

Several of the faithful are mentioned in Pepys' Diary, according to which a manservant of one Dr. Burnett had been the first person to die of the plague. This same Burnett, with Dr. Glover, Dr. O'Dowd, and two other physicians, all died of the plague soon after making an autopsy on a lay victim. In the National Dictionary of Biography an amusing account is given of the daily habits of Dr. Nathaniel Hodges, who cared for many plague patients.

"He rose early, and took an anti-pestilential lectuary as large as a nutmeg". "On entering a house he had a disinfectant burned on a hot coal, and, if hot or out of breath, rested till at his ease, then put a lozenge into his mouth, and proceeded to examine the patient". "He spent the evening at home, never smoking tobacco, of which he was a professed enemy, but drinking old sack till he felt thoroughly cheerful". "Twice during the epidemic he felt as if the plague had infected him, but after increased draughts of sack he felt well in a few hours".

Defoe has an eloquent word of excuse for those who deserted their posts at such a time. "I recommend it to the charity of all good people to look back and reflect duly upon the terrors of the time, and whosoever does so will see that it is not an ordinary strength that could support it; it was not like appearing at the head of an army, or charging a body of horse in the field; but it was charging Death itself on his pale horse". Thucydides remarks that the physicians "themselves were

among the first victims, because they oftenest came into contact with it".

The ancients were as far from guessing the cause of plague as that of most other diseases. Hippocrates said it was from the gods. Dionysius Halicarnassus and Agathias agreed in calling it a calamity sent from God. Each several nation accepted this and other calamities as a punishment of some particular sin. The inhabitants of Delos, a small island in the Aegean sea, and the reputed birthplace of Apollo and Diana, believed the plague to have been sent to them on account of the wrath of Apollo, because a certain distinguished man had been buried in the island, against the ancient custom. Homer's Iliad attributes the plague in the Greek army to the wrath of Apollo for the theft of the maiden Briseis by Agamemnon.

Among natural causes, Lueretius attributes the disease to unwholesome air, due to clouds or mists in the heavens, or to generation from the moist places by unseasonable rains and the warmth of the sun. The foulness (vitium) of the atmosphere is also said to arise from the evil disposition (maligna constitutione) of the stars. There was a dispute as to the effect of hot and dry or moist summer seasons. Concerning the plague at Thebes, described in verse by Seneca in his Oedipus, we are told that there was neither a gentle breeze nor light zephyrs; but Titan increased the fires of the "heat-bringing dog star". Water deserted the streams, and their color the herbs. Dirce (a spring north-west of Thebes) became dry, and the river Ismenos flowed slenderly, etc. Virgil sings in the same key.

We find these ideas vaguely reflected by more recent writers. Thus Van Beverwyck, in the seventeenth century, asserts that a sudden change in the atmosphere causes the plague. Even so late as the last quarter of the nineteenth century, the writer of the article on the plague in the ninth edition of the Encyclopedia Britannica speaks of the so-called mild plague, pestis minor, or larval plague, as being possibly of a miasmatic character. Even with regard to the major disease, pestis major, which the same article suggested might be due to a living organism of the class Bacteria, it is declared that the

mode of transmission of the disease on board ship is by a "floating atmosphere of plague".

We know today that the varieties of plague are not equally contagious as between man and man, much the most dangerous in this respect being the pneumonic form. In the time of the plague in Florence and Milan there was a very positive belief in the carrying of plague by means of fomites, the clothes and other belongings of those attacked being blamed for the spread of the infection. Thus Boceaccio says that not only speaking and intercourse with the sick gave the disease, but "also touching of the clothes or any other thing which had been touched or used by the diseased persons".

To controvert this opinion Bulard, a French physician in Egypt, wore for two days a shirt taken direct from the body of a plague patient. The Franco-Egyptian physicians, moreover, stated that it had been a common practice in Egypt when a plague epidemic was past, to sell the clothes and effects of those who had died; there being no apparent harmful results. In Constantinople the clothes were commonly sold immediately after death, and it is stated that the old clothes men were not especially liable to the plague.

On the other hand, of two criminals in Egypt who were compelled to wear the clothes of plague patients, both took the disease, one of them fatally. But the French physicians conducted no less than one hundred post-mortems on plague patients without suffering any harm, although no special precautions were taken.

No disease has passed with greater rapidity from place to place than the plague. Yet its migration and contagion have always been subject to puzzling exceptions. In Russia in 1878, the disease was confined for two months to a single village, although for most of the time communication was perfectly open. In Egypt in 1834, although traffic was continuous between Alexandria and the near-by towns of Damietta and Mansoorah, yet it took eight months for the disease to pass from the first-named town to the other two. On the other hand, it was noted by the Britannica writer that the disease crept in a gradual manner from house to house and from street

to street; and that when a case of plague broke out in a house the disease commonly affected all or almost all of the household.

This brings us to consider briefly the modern conception of plague, and the recent disclosures explaining the mystery of its many eccentricities. When the ancients noted, as the biblical writer did concerning the Israelitish plague, that the human epidemic was accompanied or preceded by the death of rats or mice, they, of course, did not realize that infection of these lower animals was always a necessary precursor of the epidemic in man. The story of the steps by which the true relationships of the disease have been established reads like an elaboration of an adventure of Sherlock Holmes.

Perhaps the most valuable work on the subject has been done by the Commission appointed by the British Government to investigate the plague in India. It was found that the season at which the plague appeared varied with each locality; that huts and houses remained infected after the inhabitants were dead or had fled. Houses were also proved to have become infectious while standing empty, and it was shown that the danger of infection in all the houses was greatest at night.

The immediate criminal in the matter of bubonic plague infection, and to a slighter extent in the less frequent but more contagious pneumonic form, appears to be the flea. The guilty insect is not the one which commonly infests man, but finds his normal host in the rat or other rodents, from which he passes to the human victim.

The rôle of the rat flea explains many apparently unconnected facts, such as the carrying of the disease on board ship, the infectiousness of empty houses, the periodic recurrence of the disease in certain localities, and its onset and cessation at special seasons. Rats infected with plague do not transmit the disease to their companions except by way of fleas which carry the plague bacillus in their intestinal tract. As regards season, the responsible fleas only breed at certain ranges of temperature, greater heat or cold being unfavorable to their multiplication.

We are apt to think of the plague as a disease which will never become formidable

among ourselves. In Colorado we are favored in this respect, on account of the absence of the flea pest. Yet as regards the United States the danger is by no means insignificant. In India the present outbreak of plague dates back to 1896, when the first case was diagnosed in Bombay. The average Indian practitioner knew that the plague appeared sporadically from time to time in remote valleys of the Himalayas, but did not imagine that it had any practical importance for himself. In the words of W. B. Bannerman, "it was regarded as in the nature of an antiquarian curiosity belonging to those old world regions, and forever banished from the civilized country of Hindustan".

In 1910 some excitement was caused in English medical circles by the death from plague of four inhabitants of an inland village in the county of Suffolk. Investigation showed the disease to be fairly widespread among rats and hares in this part of England.

The *Journal of Infectious Diseases* for 1909 contains an account of a case of subacute plague in California. The boy had been hunting ground squirrels sixteen days before his death from a combination of bubonic, septicemic, and pneumonic plague. Ground squirrels infected with plague bacilli were later shot in the immediate vicinity in which the boy had hunted. At this time no case of plague in man had been observed in California for a year, and none in rodents for a period of seven months.

A fatal case of plague was reported by a surgeon of the United States Public Health Service as lately as September, 1913.* It

*The reality of the menace of the plague for the United States is clearly shown by Rucker (Texas State Journal of Medicine, September, 1915, p. 266). Human plague was found in the Hawaiian Islands in August, 1914. "Taking the Hawaiian Islands as a central point, plague is found to exist in Seattle, 2,409 miles away, California, 2,091 miles distant; Yokohama, 3,445 miles away; Hong Kong, 4,857 miles away, and in Shanghai, a little over 5,000 miles distant." The entire Gulf coast of our country is menaced by plague in Havana. The disease was found among rats in New Orleans in March, 1915. The Atlantic coast is threatened with the importation of plague from the eastern coast of South America, and also from European, African and Asiatic ports. "In view of the fact that plague is a disease of rodents, which travel around the world in ships, the United States must consider itself as seriously menaced by bubonic plague."

occurred in a white man who had lived for the previous two years in Contra Costa County, California. In the week ended August 30th, 1913, the Public Health officers examined 1,959 rats in California with negative results, whereas of 197 ground squirrels examined in Contra Costa County one was found to be plague infected. A week earlier, five infected ground squirrels had been discovered, and in the week before that twelve cases of plague in ground squirrels were found in the same county. So that within our very borders is a source of infection which might conceivably, in specially favorable circumstances, give rise to a widespread epidemic.

But here, as elsewhere, the best foundation for preventing the spread of disease is fully to understand its cause; and we may comfort ourselves with the knowledge that medical science in the twentieth century is at last arriving at a thorough understanding of the plague.

520 Metropolitan Building.

News Notes

A number of visiting physicians were guests of the El Paso County Medical Society on August 10th in an automobile tour from the Elks' Club to Glen Eyrie. The evening was spent at Palmer Lake, where Dr. Bertram W. Sippy, of Chicago, delivered a lecture after the party had eaten dinner.

In consequence of the recent severe epidemic of infantile paralysis in New York, the United States Public Health Service has been sending a notification to health departments all over the country when families with children under the age of fifteen have left New York City for those points. Upon the arrival of the family the local health physician calls at the address given and examines the children.

Another Denver physician was recently arrested on a charge of responsibility for the death of a woman upon whom he was accused by a coroner's jury of performing an illegal operation.

On his way home from the Glenwood Springs meeting, Dr. Crum Epler, Secretary of the State Medical Society, developed diphtheria, with which he is now under quarantine in St. Mary's Hospital, Pueblo.

Dr. C. G. Rilance, for seven years a Denver practitioner of medicine, has gone to Quebec, Canada, to serve in the Canadian Army Medical Corps. Dr. Rilance is a native of Canada. After a few weeks at the base hospital at Quebec, he will sail for England.

Dr. H. W. White of Fruita lost an Overland automobile, his instruments and other equipment when the car, which had become stranded in crossing a "wash", was overtaken by a flood due to a cloudburst, and rolled over and over down

the valley. Dr. White has since recovered the machine. With the exception of the steering wheel the car was completely buried in mud.

Dr. C. B. Lyman, while on a vacation at Estes Park recently, fell and broke his leg.

Dr. H. R. Palmer recently sold his practice in Grand Junction, and removed to Trinidad.

A bill passed by the Denver City Council, in language of very broad scope, provides that physicians and surgeons shall report to the Chief of Police with regard to any accident or apparent accident case which they may be called upon to attend, the alleged object being to prevent any suicide or accident case escaping the knowledge of the police authorities or the coroner.

Drs. C. O. Hanford and Paul Lennox were the official physicians in connection with the automobile races held to celebrate the opening of the new automobile road up Pike's Peak.

Dr. A. A. Harvey, for several years a physician at Aguilar and other places in the same vicinity and who for the past year or so has been living at Cañon City, died in that place at the end of July as the result of a long illness.

Three Windsor physicians, Drs. Nelson, Haskell and Wagner, are carrying out the group idea. The three physicians have separate offices in the same building, but according to a local newspaper, patients of any one of the three may obtain consultation with any or all of the group for the same price as would be charged by one.

On account of the early publication of the August issue of Colorado Medicine, the resignation of Dr. F. R. Coffman, Denver Deputy Health Commissioner, and the appointment of Dr. C. B. James as Denver City Physician, escaped notice last month.

Dr. C. N. Needham and his family are leaving Grand Junction probably to locate on the Pacific coast.

Dr. Arnold S. Taussig and his family spent two or three weeks on a fishing trip in Middle Park.

Dr. and Mrs. Sherman B. Williams and their daughters spent an August vacation at Cassells.

Dr. L. H. Wade has joined the medical staff of the Boulder-Colorado Sanitarium at Boulder.

Dr. J. R. Gaines of Las Animas recently returned from Rochester, Minn., where he had been under treatment in the Mayo Hospital.

Dr. B. B. Blotz, Rocky Ford, recently received a number of small flesh wounds from the explosion of an oxygen tank.

Dr. H. R. Lennon, of Denver, has been taking care of the practice of Dr. A. D. Bronson at Telluride, while Dr. Bronson was in the East taking a vacation and attending clinics.

Dr. J. J. Stanton, a physician of Cheyenne, Wyo., committed suicide by cutting his throat with a razor in Denver on August 30th. Dr. Stanton had been ill for some time.

The Denver News seems to have discovered a new disease, the spelling of the name of which is "stomittitus". It is said by the newspaper, which is always remarkably well informed on medical matters, to be an aftermath of measles, and one of the most baffling diseases known in medical circles. If newspapers would employ story writers who had received at least a high school education, they might be able to avoid this kind of nonsense.

The Publicity Committee of the Medical Society of the City and County of Denver recently addressed to the Denver News a letter calling attention to the danger arising from careless publicity being given to such relatively untried "remedies" as "cyanocuprol", around which, in connection with the names of a few physicians, a good deal

of sensational "copy" has recently appeared in the Denver papers.

Mrs. C. B. James, wife of Dr. James, Denver city physician, was badly hurt in an automobile accident in Detroit on August 20th.

The lawyers and doctors of the Pike's Peak region held their second baseball match of the season on August 19th at Washburn Field, Colorado Springs.

The San Luis Valley Medical Society met in Creede on August 17th, the number of physicians and guests present being thirty-five. The party was entertained at a trout dinner by Dr. Thos. Howell. Among the visitors was Dr. I. B. Perkins of Denver.

Dr. A. H. Carter of Salt Lake City has taken over the practice in Wiggins, Colo., of Dr. Broecker, who has gone to Denver to be associated with Dr. I. C. Mierley.

Dr. P. M. Chase, Denver, spent some time at Fort Logan in his capacity as First Lieutenant in the Medical Reserve Corps.

Drs. M. E. Preston and M. R. Bren, both of Denver, and Dr. P. S. Wagner, of Windsor, have been ordered to the Philippine Islands with the rank of First Lieutenant in the Medical Reserve Corps of the United States Army.

Dr. W. C. Finnoff is spending six weeks in Boston, doing post-graduate work in the eye and ear.

Drs. Shollenberger and Melville Black, Denver, are both away on six weeks' tours in the East.

Dr. and Mrs. M. Kleiner have recently returned from a six weeks' vacation at New Haven, Conn., where the doctor says his principal occupation was to sit around and let the mosquitoes bite him.

Dr. T. L. Howard, Denver, was recently visited by his father, also a physician, from "way down south".

Dr. J. W. Amessee read a paper on *Obscure Causes of Infantile Mortality* at the annual meeting of the Utah State Medical Association on September 12th and 13th, in Salt Lake City.

On account of continued ill health Dr. J. T. Beall has sold his hospital at Rifle, Colorado, to Dr. C. E. Morse, of Alamosa. Dr. Beall will take a long automobile camping trip in the east in the hope of regaining his health.

Dr. F. E. Wallace of Pueblo has been appointed oculist, aurist, etc., to the Western Division of the Missouri Pacific Railroad.

Medical Societies

BOULDER COUNTY.

The **Boulder County Medical Society** met in regular session August 3, 1916, at the Commercial Association rooms, Boulderado Hotel. Dr. C. T. Burnett presided. It was the regular monthly business meeting. Dr. John S. Bouslog was elected to membership.

The matter of delegates to the State Society was brought up and it was found that Dr. W. W. Reed was senior delegate, with Drs. Jolley and Gilbert as alternates, and that Dr. W. W. Wasson was junior delegate, with Drs. LaRue and Gillaspie as alternates. It was moved and carried that these names be immediately forwarded to the State Society.

The evening was devoted to papers by Drs. Burnett and Cattermole on

Anterior Poliomyelitis.

Dr. Burnett discussed in detail what is known of the etiology of the disease, and demonstrated

under the microscope the coccus supposed to be the causative organism. He said that in his recent trip to the Rockefeller Institute and other points in the East, he found that little had been done toward determining positively the causative organism, or in finding a specific serum for the treatment of the disease. Recent investigation has not advanced our knowledge along this line very materially. Anterior poliomyelitis has been successfully inoculated into monkeys, but not into other animals, and little has been done in the production of a specific therapeutic serum, as monkeys are difficult to obtain in sufficient numbers for the production of a commercial serum.

Dr. Cattermole discussed in considerable detail the symptoms, grouping them in two general divisions—the first a brief acute attack which is very hard to diagnose from other acute infections, and the second a long chronic stage, usually characterized by paralysis. Dr. Cattermole said that in the absence of an epidemic most cases in the acute stage would be overlooked, and the disease would not be recognized until signs of paralysis occurred. Isolation and careful observation is recommended in all sudden acute illness of babies and children in which the diagnosis is not positive.

Treatment was not discussed in much detail, as there seems to be little to be done in the way of treatment. Before making a diagnosis it is well, in this locality at least, to rule out an infection following tick bites, which causes a similar paralysis.

The members in attendance were Drs. Cattermole, Burnett, Gilbert, M. E. Miles, Queal, Greene, Gillaspie, Wasson and LaRue.

The invitation from the El Paso County Medical Society to attend their meeting August 10th was discussed, and it was decided that at least one automobile party of six members of this society would attend.

C. L. LA RUE,
Secretary.

Book Reviews

Diseases of the Eye. By Geo. A. de Schweinitz, M.D., LL.D., Professor of Ophthalmology in the University of Pennsylvania. Eighth Edition, thoroughly revised and enlarged. Octavo of 754 pages, 386 text illustrations, and 7 lithographic plates. Philadelphia and London: W. B. Saunders Company, 1916. Cloth, \$6.00 net; half morocco, \$7.50 net.

Those familiar with ophthalmology need no introduction to this volume. For many years de Schweinitz has been a standard text book of the eye, and to this edition have been added the new achievements in this branch of medical science. Reference to squirrel plague conjunctivitis, swimming bath conjunctivitis, the ocular symptoms related to pituitary body, and several other conditions appear in this edition for the first time. Many of the newer operations have been added and the pages on corneoscleral trephining are written by Lieut.-Col. Elliot. The writer has done much valuable work on iritis, and to this chapter has been added a section on the relation of autotoxemia and mucous membrane infections.

The illustrations are numerous and very well arranged. They have been admirably reproduced. Many are photographs of actual cases which have been seen by the author. There are also several

illustrations of microscopic sections of diseased conditions of the eye. Six of the seven lithographic plates are of fundus diseases, the seventh is of the common bacteria which produces conjunctivitis. To the oculist this is a valuable work. It will be equally valuable to the physician and student as a handy and complete text book of eye diseases.

W. C. F.

Practical Medicine Series, Vol. III, 1916, Eye, Ear, Nose and Throat. The Year Book Publishers, Chicago. Price \$1.50.

This volume covers the literature on eye, ear, nose and throat for the past year. The section devoted to the eye is edited by Casey A. Wood, C.M., M.D., D.C.L., and occupies the first 179 pages. The vast amount of military eye surgery published in European literature has necessitated the addition of a chapter on this branch of ophthalmology in this volume. Albert H. Andrews, M.D., edits the next section, on diseases of the ear, which is presented in the same form as in the volumes of the previous years and occupies 66 pages. The literature has been reviewed and abstracted with clearness, which provides a ready and easy reference section for the busy practitioner. The nose and throat literature has been condensed by George A. Shambaugh, M.D., and fills the last 100 pages. This section is well illustrated and the text is clearly, yet briefly, written. The pages on mouth diseases present the latest theories as to the causation of pyorrhea alveolaris and its treatment.

W. C. F.

The Clinics of John B. Murphy, M.D., at Mercy Hospital, Chicago. Volume V, Number 4 (August, 1916). Octavo of 222 pages, 59 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Published bi-monthly. Price per year: Paper, \$8.00; cloth, \$12.00.

The untimely death of John B. Murphy in August will put an end to the Clinics with the issuance of two more numbers after this one. After the completion of this volume, the Clinics will probably be succeeded by The Surgical Clinics of Chicago.

This number continues to show a large proportion of bone and joint work, this time including two-thirds of the cases. Arthroplasty of the mandible, elbow and shoulder joints is discussed at length, and the etiology and necessity of immediate treatment of osteomyelitis are discussed.

The subject of subperitoneal streptococcal cellulitis is brought out and emphasis is laid against operative treatment. The lesion is not in the peritoneum but involves the subperitoneal cellular tissue, and therefore produces cellulitis with redness and edema of the peritoneum with very scanty exudate. It is self-limiting and such an infection of the peritoneal cavity should not be operated upon. This type was formerly called "dry peritonitis."

R. G. P.

The Medical Clinics of Chicago. Volume II, Number 1 (July, 1916). Octavo of 220 pages, with 41 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Price, per year: Paper, \$8.00; cloth, \$12.00.

The Clinics continue to improve with each number, and now there are eighteen contributors, compared with eight a year ago. There are two especially important articles in this number: Oral Infections, by Brophy, and The Use of Digitalis, by Edwards. Edwards gives a very big field to the use of this cardiant, seeming to find very few real contra-indications. He says digitalis is not even

to be discarded in arteriosclerosis and nephritis because here it may relieve by lessening dyspnea and carbondioxid narcosis.

Diabetes is taken up again by both Tice and Strouse, and emphasis is laid on the treatment of severe acidosis in this disease. The prime thing is to treat the acidosis by the administration of glucose and sodium bicarbonate, and then to clear up the glycosuria.

Williamson gives six most interesting clinics, the most puzzling of which are a case of Unilateral Bronchiectasis, and one of Recurrent Thrombo-ulcerative Endocarditis, the diagnosis of the latter only being entirely cleared up at autopsy.

R. G. P.

Ultra-Violet Light by Means of the Alpine Sun Lamp; Treatment and Indications; by Hugo Bach, M.D., Bad Elster, Saxony, Germany. Authorized translation from the German. Paul B. Hoeber, New York. Price, \$1.00 net.

This little book sets forth the advantages and disadvantages of the ultra-violet light very ably, enumerating different cases in which it has been used successfully, and also gives a good description of the lamp, its history, its mechanism and the way in which it should be used.

I think the book should be read by every physician who comes in contact with any of the diseases that the author claims is benefited by the use of the ultra-violet light, including various skin and nervous affections and disorders of metabolism.

A. J. C.

Bribery in the Slaughter House Inspection Department of New York City. Eight of the veterinarians employed by the Department of Health of the City of New York were recently suspended from duty on charges of receiving bribes for passing diseased meat. The six slaughter houses on Johnson Avenue, Brooklyn, contribute about 12 per cent of all the animals used in New York. Some months ago the New York Bureau of Food and Drugs was informed by a newspaper man that he had found tuberculous meat bearing the inspection stamp of the Department of Health. The slaughter house inspection service was reorganized, and the operators of the slaughter houses were notified that unless conditions in their houses were improved their permits would be revoked. Tuberculous meat, however, continued to turn up in the markets of the city, and one of the new veterinary inspectors in the slaughter house inspection service reported to his superiors that advances had been made to him indicating a willingness on the part of the proprietors of the slaughter houses to pay money for the passing of diseased meat. In accordance with a secret understanding between the officials of the department, the proprietors of the slaughter houses were gradually encouraged to definitely commit themselves in such a way as to furnish tangible evidence of bribery of public officers. The supervising inspector, who was regarded by the proprietors as the chief obstacle to freedom of operation, was even temporarily "got rid of" by means of supposed "influence", and an installment of the amount which it was agreed should be paid for this removal was accepted by an authorized representative of the inspection department. The result was the arrest of twelve operators and employes of the slaughter houses on Johnson Avenue and the revocation of six permits for slaughtering cattle and other animals.

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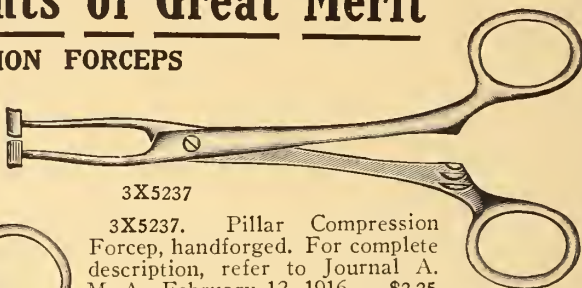
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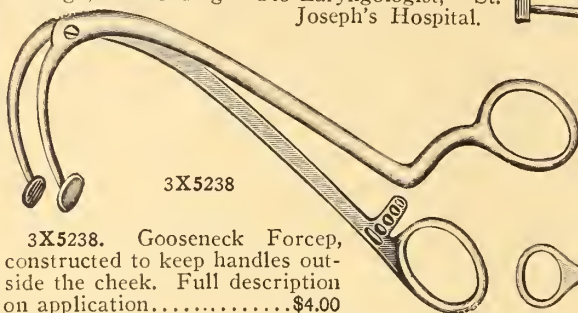
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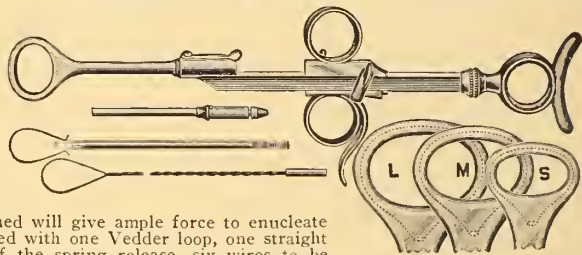
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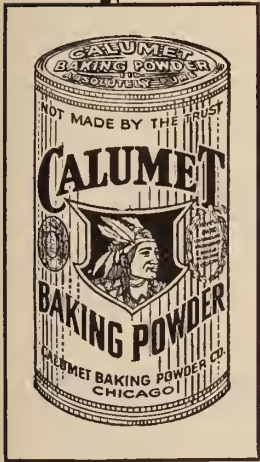
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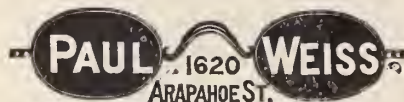
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Editorial Comment

AN URGENT APPEAL.

(The subject of the letter here printed is one of grave importance to the general public and to the medical profession throughout this state: and only by earnest cooperation on the part of all our members can we insure the defeat of a contemptible conspiracy against the health of Colorado citizens. Every member of this Society is urged to request as many as possible of his friends and patients to vote for the bill.)

To the Medical Profession of Colorado:

Dear Doctor:

The medical bill, which was passed by the last legislature and signed by the Governor, will be referred, on account of a petition made up of many fraudulent names, to the people for acceptance or rejection next month.

While the bill is not just what you or I would like, yet it is far better for Colorado than the old bill and, for many reasons, should be upheld by the people:

First—Because it is a better medical act than any we have ever had.

Second—Because it controls every branch of the healing art—including osteopaths, chiropractors, midwives and chiroprudists (Christian Scientists being exempt).

Third—Because the grounds on which any person may hold himself out to the public as engaged in the healing art are based on both educational and moral qualifications—both of which are to be carefully investigated by the Board of Examiners.

Fourth—Because the bill will in the future keep out the unscrupulous and uneducated "fakir" who now may style himself "doctor" of almost anything, and begin his "practice" without examination or preparation.

Fifth—Because only one board of licensure will be necessary.

We believe that if your medical society will appoint an influential committee to call on the editors of your county papers and ask them to advise the people to vote for the bill in November, the bill will be approved by the people.

Won't you please get the following copies of "Colorado Medicine" and read the articles referred to at your next regular meeting:

February number, 1915, page 33.

May number, 1915, page 135.

August number, 1915, page 231.

Also impress on your society the necessity of a strong committee to see the papers in order that our efforts to reach every newspaper in the State and make it a friend of the bill may be carried through completely?

I urge each doctor in Colorado to gain as many votes as possible for the bill, and to use freely the printed slips which will be sent to him.

Believing that this is the most important work for Colorado that you can do at this time, and trusting that you will not fail to act yourself and to have your society act promptly in the matter, I am

Sincerely yours,

A. C. MAGRUDER,
President, Colorado State Medical Society.

THE PROCEEDINGS OF THE HOUSE OF DELEGATES.

A large amount of space in this issue is occupied with the report of the transactions of the House of Delegates of the Colorado State Medical Society for 1916. No one who

has the welfare of the state and local societies at heart, and who desires to understand what is being done in those organizations, will fail to read at least the greater part of this report. Many of the reports of committees will be found to offer distinctly interesting reading. The selection of any passages in the report in which the reader may be particularly interested is facilitated by the typographical arrangement. Attention should be given to the report of the committee on the revision of the constitution and by-laws. As regards the by-laws, the action of the House of Delegates is final. In the report of the transactions of the House of Delegates, in this issue, are given merely the amendments made in the by-laws. In the November issue of *Colorado Medicine* the by-laws will be printed in full in the amended form; and reprints of the by-laws will subsequently be circulated by the Secretary of the State Medical Society to the local secretaries. As regards the constitution, the decisions of the House of Delegates are merely effective as recommendations which must be voted upon by the constituent societies before the next annual meeting of the State Society. The proposed changes in the constitution will therefore shortly be circulated by the Secretary of the State Medical Society to the local organizations for their consideration and verdict.

The November issue of *Colorado Medicine* will also contain a list, complete at the date on which it left the office of the State Secretary, of the members of the Colorado State Medical Society, including the place of residence and the name of the local society to which each member belongs.

MEDICAL ORGANIZATION FOR WAR.

However pro-Tenton and pro-Ally may clash in deciding where to place the diplomatic responsibility for the outbreak of the European War, the deliberate historian can have only one opinion as to the extreme unpreparedness of Great Britain for war in the military sense in 1914. Among the many overwhelming problems of organization and equipment which presented themselves dur-

ing the process of enlarging an army of a few hundred thousand to one of several million, not the least in magnitude and importance was that of providing an adequate medical staff for the new troops. In an issue of the *British Journal of Surgery* which is largely devoted to the surgery of war, Keogh writes in general terms a survey of what was involved for Great Britain in the development of an efficient army medical service and of how the problem was faced.

The lessons furnished by England's achievement in this direction, of which no doubt many more details will be available after the completion of the war, are of significance for the United States, whose relatively small nucleus of fighting men may in some great emergency have to be expanded as rapidly as was that of Great Britain. Keogh rightly observes that the primary function of the army medical corps is the maintenance of the strength of armies in the field through the prevention of disease. This primary function demands a close study of the technical problems of field sanitation; and much is to be gained by giving systematic courses of instruction in hygiene to combatant officers and men. The collection, removal, distribution and care of the sick and wounded, although quite commonly thought of as the first, really are the second of the great functions of the medical service in war.

The material available as the basis of the medical personnel of England's new armies, at the outbreak of the present struggle, consisted of the medical corps and the nursing service of the regular army, with their reserves, and in addition a territorial medical corps consisting of members of the civil medical profession, together with a civil nursing service. A home hospital reserve had been formed, and a further supplementary organization existed in the form of the British Red Cross Society. Around these more or less thoroughly trained nuclei were assembled the greatly enlarged staffs for technical, medical, surgical and nursing duties. To the organization work directly connected with the army in the field and the base hospitals was added a mass of work connected with the supervision of recruiting for the new

armies, their housing, and the sanitation of camps and barracks.

The development of surgical policy has been entrusted to consulting surgeons, who set the scope and standard of practical work and scientific investigation, supervise operations, and approve the operators. When new problems of military surgery brought forth a clash of opinions between bacteriologists, surgeons, and physicians, a National Research Committee gave invaluable aid in the settlement of many questions. Laboratory after laboratory was established at home and abroad, so that, as Keogh remarks, medicine in war has never had so fully the benefit of organized scientific researches.

An interesting development of this war has been a marked tendency to classify the wounded, employing experts in special branches of knowledge for each class. Keogh suggests that the same line of evolution will later be followed in general hospitals, where hitherto we have demanded from the general surgeon a more extensive knowledge than he can nowadays possess.

According to a recent editorial in the British Medical Journal, the rate of evacuation from the front to the bases during the battle of the Somme was so rapid that by the end of the fourth day, or within a few hours of the end of the initial battle, most of the casualty clearing stations and field ambulances had very few patients left on their hands, the great majority being already on the ambulance trains or otherwise safely removed to a distance from the scene of action, and very many of them being in hospitals at home. From the fighting line backward the cases were repeatedly classified and reclassified, the patients being distributed according to the apparent gravity of their wounds or their general condition.

THE CONTROL OF VENEREAL DISEASE

An important step toward the organized control of venereal disease has been taken by the English Local Government Board, which has issued an order putting into effect the recommendations of a royal commission on venereal diseases so far as the provision for diagnosis and treatment is con-

cerned. The order is to be carried out by various local authorities, and provides for the establishment throughout the community of free laboratory facilities for diagnosis, and of adequate and skilled free treatment of the persons affected with venereal disease. Seventy-five per cent of the cost of carrying out schemes under the order which have received the approval of the board will be met from imperial funds. Arrangements are to be made for enabling any physician practicing in the area of any local authority to obtain, at the cost of that authority, a scientific report on any material which he may submit from a patient suspected to be suffering from venereal disease; and schemes are to be prepared and submitted to the board for hospital or other institutional treatment of patients suffering from such diseases, and also for supplying medical practitioners with salvarsan or its substitutes.

In order that persons affected by venereal diseases shall not be deterred from taking advantage of the facilities which are provided, the institutional treatment required is to be provided at general hospitals, and the special facilities called for are to be directed mainly to cases in which the diseases are in the communicable stage. It is to be made clear that treatment provided is available for all comers, irrespective of means or of place of residence. Clinics are not to be specially designated as for venereal diseases, and nothing is to be done to distinguish the patients who attend for treatment of these diseases. In order to disseminate information as to the scheme and to obtain advantageous suggestions, it is proposed that in each area a committee shall be formed composed of representatives of the physicians practicing in the area, police and poor authorities, midwives, probation officers, rescue workers, clergy and ministers of all denominations, and voluntary agencies concerned in the treatment of venereal diseases; the committee to include a sufficient number of suitable women.

The government of Western Australia recently passed a radical law dealing with venereal diseases—namely, gonorrhea, syphilis (including congenital syphilis), soft chancre, venereal warts, and granuloma. Severe pen-

alties are attached to breaches of the law. No person other than a medical practitioner is to attend upon or prescribe for any person suffering from any venereal disease. Those suffering from venereal disease must place themselves under the care of a medical practitioner within three days of becoming aware or suspecting that they are so suffering, and must continue under such treatment until they receive certificates of cure. Physicians must notify all cases of venereal disease on a prescribed form, stating age and sex of the patient, but not the name and address. The doctor must also notify the health commissioner of failure of any patient to attend for six weeks for treatment. The responsibility for minors is placed on the parents or guardians. Upon receipt of written and signed information to the effect that any person is suffering from a venereal disease, and provided that the commissioner has satisfied himself that the person named is suffering from such disease, notice in writing may be given to the patient requiring him to consult a medical practitioner for the purpose of obtaining from him a certificate that he is not suffering from the disease. If the commissioner judges that there is risk of the patient infecting other persons, he may cause his arrest and detention in hospital for two weeks, and machinery is provided for the extension of this period wherever necessary. To facilitate popular understanding of sexual diseases, the Western Australian government press has issued a neat booklet in which the subject is clearly set forth; one evidence of the conscientious effort made to overcome any possibility of ignorance being the printing of the popular synonyms, such as pox and clap, alongside names like syphilis and gonorrhea. This pamphlet must be handed to infected persons by attending physicians.

AN INVITATION.

The Medical Society of the City and County of Denver has asked us to extend, through the columns of this journal, a cordial invitation to the members of the Colorado State Medical Society to attend the exercises in celebration of the opening of the

new library and meeting hall, which it is expected will take place before the appearance of the next issue of this journal. Public announcement of the exact date will be made in the public press. The occasion will probably be in the early part of November.

Original Articles

THE PRESENT STATUS OF ROENTGEN THERAPY.*

SAMUEL B. CHILDS, M.D., DENVER.

The title of this paper implies that the text must be largely a résumé of the results that have been obtained by skilled roentgenologists during the past few years in the treatment of various diseases. The magnitude of the subject and the time allowed for its presentation, however, prevent more than a brief outline of the therapeutic value of the Roentgen ray in some of the diseases in which its field of usefulness is well recognized, or the giving of adequate recognition to the many workers whose scientific experimentations and contributions to medical literature have assisted in placing Roentgen therapy upon the well-established basis which it now occupies.

It is not within the scope of this paper to deal with the technique of Roentgen therapy, but it must be stated that, until the advent of the Coolidge tube in 1913, the results obtained in the treatment of deep-seated cancers were disappointing. This tube, with the addition of perfected high-tension apparatus, has placed at our disposal an agent which can deliver a quantity of hard rays of sufficient penetration to destroy diseased cells in the deeper structures of the body. The greatest factor in allowing the use of these penetrating rays is the filter which is applied to the skin area under treatment. In 1905 Pfahler first advocated a leather filter to cut out the soft rays that are absorbed by the skin. Since then different substances have been tried, but the filter now in general use consists of a sheet of aluminum three to four mm. thick, in con-

*Read at the annual meeting of the Colorado State Medical Society, September 5, 6 and 7, 1916.

junction with a piece of sole leather of about the same thickness.

Another very important factor, in achieving present results, is the greatly increased dosage that can be given to a deeply located organ by selecting different portals of skin entry. This is known as the cross-fire method.

In the treatment of superficial lesions, the old method of fractional doses, either with or without a filter, is still used by many with excellent results. The permanency of the results in the treatment of superficial skin lesions by the Roentgen ray has long since been established, and the results obtained in the treatment of rodent ulcer and epithelioma, within a comparatively short time after Roentgen's discovery, attracted the attention of the profession to the possibilities of this new line of treatment. In the treatment of superficial epitheliomata without glandular involvement, the Roentgen ray holds first place, for in many cases it leaves no scar, while in others, where the disease has already destroyed considerable tissue, the resulting scar is reduced to a minimum. As this disease is found most frequently upon the face, the avoidance of an unsightly scar is most desirable. Its application is painless, a very decided factor in inducing patients to accept prompt and early treatment.

The results obtained in the early skillful treatment of this disease justify the assertion that a cure can be expected in at least 95 per cent of the cases.

The epitheliomata involving the lip are the most refractory to treatment and the most prone to recur, but even here continued treatment until all signs of induration have disappeared has given the writer a high percentage of recoveries. This must be understood, however, to apply to those cases of epitheliomata in which no glandular involvement is present. In epitheliomata involving the mucous membranes, the results obtained by any method of treatment are not so satisfactory, on account of the greater liability to glandular involvement and recurrences, and in these cases the patients are afforded the best chance of recovery, either by the wide removal of the affected part by sur-

gery or by some method of cauterization, preferably fulguration, followed by Roentgen ray treatment.

In rodent ulcer the consensus of opinion of roentgenologists is that the results are not so good as in epitheliomata, but since the employment of the combined method of fulguration and Roentgen ray in the more extensive lesions, the results are eminently satisfactory, and probably better than are obtained by any other method of treatment.

Even in apparently hopeless cases of rodent ulcer and epithelioma the rays are of great benefit in minimizing the amount of discharge, in relieving pain and in retarding the progress of the disease. Some of the benign superficial diseases in which the Roentgen ray is recognized as a valuable aid in treatment are: *acne vulgaris*, *acne rosacea*, ringworm, chronic *eczema*, *psoriasis*, *pruritus*, *lupus vulgaris*, and *keloid*. A separate description of the results obtained in each seems unnecessary.

In the treatment of deep-seated, non-malignant lesions, the Roentgen ray has proved of service in leukemia, Hodgkin's disease, glandular tuberculosis, exophthalmic goitre, enlarged thymus in children, uterine myomata, uterine hemorrhage, and enlarged prostate, as well as in other diseases.

Leukemia: The first case of this disease treated by the Roentgen rays was reported by Pusey in 1902, since when a number of other investigators have reported symptomatic cures, and Pancoast's extensive investigations have been largely instrumental in establishing the fact that the Roentgen ray is of decided benefit in these cases. The results in the lymphatic form are better than are those in the splenomyelogenous.

At the present time the bone marrow is recognized as the probable original focus of the disease, and the glandular enlargements are considered secondary. Stengel and Pancoast were the first to call attention to the fact that it is more important to treat the long bones than the spleen and other secondary enlargements.

In 1913, Bécélère reported one hundred and ten cases of leukemia that were treated with the Roentgen rays. Ninety-three were myelogenous, twelve lymphatic, and five were

acute forms. The effects were unfavorable in the acute forms. Transitory improvement was obtained in the myelogenous, but this was followed by recurrence in every case. In the lymphatic type there was an improvement with almost complete return to normal.

The writer's experience coincides with the statement of Case, who says the prognosis in any case is unfavorable as to cure, even after Roentgen ray treatment, although the symptomatic cure is better than with any other therapeutic method.

Tuberculous Adenitis: Excellent results can be obtained by Roentgen ray therapy, if skillfully and persistently administered, and these results, in the experience of the writer, covering a period of observation of from ten to fifteen years, have been permanent in the great majority of cases.

Exophthalmic Goitre: In a paper read before the American Roentgen Ray Society in 1915, Pfahler and Zulick gave an extensive bibliography on the treatment of this disease by the Roentgen ray and stated the following results, as judged by a review of the literature and from their own experiences in the treatment of twenty patients: The pulse rate will show reduction in nearly all cases and will serve as the best guide as to prognosis and as to the time of discontinuing treatment. Next to the improvement in the pulse, one finds an increase in weight. The nervous symptoms in the cases that respond to treatment improve nearly on a parallel with the pulse rate. In the size of the goitre they find a reduction in about one-half of their cases.

Schwarz of Vienna reported his results in the treatment of forty cases, finding an increase of weight in twenty-six, diminution of the pulse rate in thirty-six, reduction of size of the goitre in eight, and amelioration of the exophthalmos in fifteen and of the nervous symptoms in every case.

If we accept the statement of Kraus, that when the tachycardia has disappeared for a certain time one may consider Graves' disease as cured, even although the other symptoms continue, Schwarz claims cures in 90 per cent of his cases.

Hodgkin's Disease: In this condition encouraging symptomatic results have been ob-

tained from Roentgen treatment. In view, however, of the results reported by Bunting and Gates from the use of specially prepared serum, it seems that a combination of both methods affords the best chance for permanent recovery.

Enlarged Thymus: Lange, basing his statements upon both experimental and clinical evidence, says that X-ray therapy is the method of choice in the treatment of this condition in children, and further states that X-ray therapy as a precautionary measure or as a pre-operative treatment may enable children of the so-called lymphatic type to withstand intercurrent disease and anesthetics which might otherwise prove fatal.

Prostatic Hypertrophy: The few cases reported of the treatment of this condition by Roentgen therapy in which there has been marked relief of the symptoms with decrease in the size of the prostate and the amount of the residual urine, warrant a thorough trial of Roentgen therapy in inoperable cases or those considered poor operative risks.

Uterine Fibroid and Uterine Hemorrhage: In 1904 Deutsch of Munich was the first to use the Roentgen rays in the treatment of gynecological diseases, but only since the advent of the Coolidge tube and the successes obtained by Kronig and Gauss of Freiburg has this method of treatment found general favor in America. The beneficial results are due largely to the effects of the Roentgen ray upon the ovary, although there seems sufficient proof that it has some effect also upon the fibroid itself.

In this class of disease, one is impressed with the uniformly favorable results that have been reported of late. It is well known that uterine hemorrhage may be the signal of malignancy, and as many authentic reports apparently establish the fact that from 5 to 7 per cent of uterine fibroids undergo sarcomatous degeneration, it is imperative that these cases be examined by a competent gynecologist or surgeon before subjecting the patient to radiotherapy. When these precautions have been taken, the Roentgen ray, used in properly selected cases, warrants the expectation that a symptomatic cure will be obtained in more than 95 per cent of the cases. The expression "sympto-

matic cure" is used advisedly, as some of the fibroids do not entirely disappear until after the lapse of considerable time, and a few others never entirely disappear, although their size is greatly diminished; yet the distressing and often alarming symptoms common in the disease cease and the patient is restored to normal health. Furthermore, the results obtained in the disappearance of the fibroid or in the diminution of its size should be verified by some competent observer other than the roentgenologist.

The cases that are near the climacteric period yield most readily to treatment, although age seems to be no contra-indication to the application of this line of treatment.

The object to be attained in the treatment of uterine fibroids and metropathic hemorrhage by the Roentgen ray is not to supplant surgery but to furnish valuable aid in carefully selected cases, such as poor subjects for anesthetics or those having serious heart, lung or kidney disease or being otherwise surgically unfit. The contra-indications to this form of treatment are fibroids associated with pelvic disease, rapidly growing tumors or those undergoing malignant degeneration, pedunculated subserous or submucous tumors or those producing such urgent symptoms that an operation offers the best chance for speedy recovery.

Albers Schonberg in 1909 gave the good results of Roentgen therapy as follows:

1. Cessation of the menses and associated with this (a) a decrease in the size of the myomas; (b) a decrease or cessation of the hemorrhages associated with the myomas, whether it be menstrual or intermenstrual; (c) a disappearance of the pains associated with myomas; (d) a cessation of preclimacteric hemorrhages or pains, whether due to myomas or not; (e) sterilization when indicated.

2. The obliteration of post-climacteric hemorrhage.

3. Disappearance or healing of myomas unassociated with bleeding, such as occur after the menopause.

4. The control of menstrual disturbances at any age, at times without sterilization and when necessary with sterilization. These results have been confirmed and accepted by

the world's best roentgenologists. The apparent sterility generally produced after radiation of the ovaries does not always continue permanent, as Stern and Edelberg each report a case in which the patient became pregnant, and later gave birth to a healthy child.

In the treatment of deep-seated malignant lesions by the Roentgen ray, much more satisfactory results have been obtained since the advent of the modern technique of the massive or intensive dose. In addition to the Roentgen ray treatment, many of the lesions which tend to penetrate into the deeper tissues give better results if certain physical methods, such as electro-coagulation or cauterization, are thoroughly used before the application of the rays. This line of treatment is applicable to malignancy of the tonsils, cervix, etc. In addition to the physical methods just mentioned, the combined use of radium and Roentgen rays in certain selected cases warrants the assertion that better results can be hoped for than by the application of either method alone.

Many investigators have proved histologically that Roentgen therapy destroys cancer cells. Furthermore, nearly every roentgenologist who administers the deep Roentgen therapy has seen miraculous symptomatic cures, the visible cancer nodules melting away in a comparatively short space of time, and in their place apparently normal tissue appearing. In operable deep-seated cancers, although only a comparatively small per cent show symptomatic cures by radiotherapy, yet in these cases no other remedial measure has proved of any service.

Carcinoma of the Breast: Bumm and Warnekros report fourteen cases, twelve of which were inoperable recurrences with very extensive glandular involvement, and the other two had not been operated upon. With one exception these cases were symptomatically cured. Holding tabulates fifty-two cases of inoperable carcinoma of the breast, with symptomatic recoveries as follows: For the year 1913, 5.8 per cent in 22 cases; for the year 1914, 6.7 per cent in 30 cases. As a result of cases observed at the General Memorial Hospital, Holding reports that in conjunction with surgery nature was able to im-

prove over 70 per cent of the deep operable diseases.

Carcinoma of the Uterus: Bumm and Warnekros report seven cases with very marked improvement; with disappearance of infiltrations, ulcerations and tumor mass in all, disappearance of cancer cells in two cases, marked hyaline and sclerotic change of tissue with extensive damage to the cancer cells in four cases, while in one case uninfluenced cancer cells were detected, although, as just stated, clinically the infiltration and mass had disappeared.

Scherer and Kelen report 103 cases of inoperable cancer of the uterus treated since 1910 by the Roentgen method with the following results. Twenty-four cases showed marked decrease in the local and general symptoms, 3 cases showed entire disappearance of the tumor mass, 2 cases showed apparent recovery for more than two years, and 2 cases which were inoperable became operable after the administration of the rays.

Siellman reports 16 cases of uterine carcinoma, of which number 6 were materially improved, 2 favorably influenced, and 41 cases were rayed after operation and remained cured.

Other observers report similar results, and the consensus of opinion seems to justify the assertion that the Roentgen treatment should be thoroughly used either by itself or in conjunction with the use of radium in all inoperable cases.

In carcinoma of the ovaries no very promising successes have been obtained, yet Bumm and Warnekros obtained marked results in two cases.

Cancer of the Stomach and Intestines: Decker reports 21 cases treated by Roentgen therapy with marked improvement in four, and states that based upon his experience he feels it his duty to give all cases of inoperable carcinoma of the stomach or intestines Roentgen therapy.

The writer has had two cases of inoperable cancer of the stomach which show marked and continued improvement after the expiration of one year from the time of the Roentgen ray treatments.

In sarcoma, Pfahler states that the re-

sults obtained are more satisfactory than in carcinoma, his results showing recovery in about 50 per cent of the cases; and he believes that sarcoma of the bone gives better results than sarcoma of the soft tissues.

The writer from a review of the literature and from his own personal experience feels that the following conclusions are warranted:

1. In the treatment of superficial epitheliomata, the Roentgen ray can effect a permanent cure in more than 95 per cent of the cases, and the results obtained are from a cosmetic standpoint superior to those obtained by any other method of treatment.

2. In leukemia and Hodgkin's disease a symptomatic cure is greatly enhanced by the use of deep Roentgen therapy.

3. In uterine hemorrhage, in carefully selected cases, a cure can be expected in over 95 per cent. At present, however, deep Roentgen therapy seems indicated chiefly in the treatment of uterine hemorrhage in those cases where an operation is undesirable.

4. In Graves' and Basedow's disease we have in Roentgen therapy a remedy which can relieve comparatively early the alarming symptoms in many cases, and if an operation is later deemed necessary the patient will be in better condition to successfully stand it.

5. All operable deep-seated cancers, with adjacent lymphatic glands, should be thoroughly removed surgically, and an area wide of the entire locality should be treated by the most approved methods of radiotherapy as soon after the operation as possible and as thoroughly as though the disease still existed. From the results already reported in the treatment of deep-seated cancers, post-operative radiotherapy can be depended upon to diminish materially the present high percentage of recurrences.

6. All patients with inoperable cancer should have the benefit of radiotherapy, supplemented by electro-coagulation in cases suitable therefor. Although a permanent cure is not to be expected, experience has proved that many brilliant symptomatic cures have resulted, and many persons have been restored to a life of usefulness and com-

fort for years, who otherwise were doomed to an early death. Furthermore, in the cases in which a symptomatic cure has not been established the patient has been relieved of pain, foul smelling discharges have been lessened to a marked degree, and the general condition has been greatly improved. It seems within the bounds of safe prediction that with a greater experience in Roentgen therapy in this class of cases, results that now seem impossible may be expected.

Metropolitan Bldg.

DISCUSSION.

Crum Epler, Pueblo: Mr. President and Members: The profession does not recognize the importance of this method of treating or alleviating disease in cases that cannot be treated by other methods. This is due largely to the fact that it has only been within the past three years that the roentgenologist has been equipped with instruments sufficiently powerful to treat diseases to any advantage below the skin.

You will all appreciate Dr. Childs' report of cases which really amount to statistics, but owing to the short time he had he could not cover the great amount of statistics on the subject. Not all the cases which have been treated, with their results favorable or unfavorable, have been reported by any means. There are only a few roentgenologists throughout the country who at this early period have ventured to give an opinion as to the results of their work. The fact of the matter is that the time has been so short that they cannot definitely say whether the cases they have treated have been cured or not.

The question may arise in your mind what happens to the pathological cell when the Roentgen rays are turned upon it? It is generally conceded that the pathological cell or carcinoma or benign tumor is less resistant to the ray than the normal cells.

In this work there are two particular things to consider, one of which is the provision of an apparatus sufficiently powerful to do the work, and the other is the technique. You must have an equipment which is sufficient to do this class of work. There are a few other things that hinder us from getting results, in a class of cases where we believe we should sometimes do so. One is a lack of cooperation, largely on the part of the patient. The physician himself often seems to believe that the Roentgen ray should only be used in a class of cases that are beyond hope from his standpoint. Now, that is not true. It is true, on the other hand, that a certain class of cases that have escaped the surgeon until such a time as they become inoperable may be benefited by the use of the X-ray. Particularly is this true as to the relief of pain, since the patient may often be enabled to go on and live out an extended life free from pain, although the tumor mass has not been entirely removed.

The application of the Roentgen ray is not entirely without general physical effects. It has its effect on the physique, and that effect is manifested mainly by an increase of lassitude. Some patients have claimed that there is a metallic taste in the mouth after this treatment. This is being overcome nowadays by the roent-

genologist to a certain degree, but not entirely. When patients are so depressed after the treatment there is a certain degree of mental fatigue, or at least a loss of interest in things generally. I have found that that has been one of the greatest factors I have had to contend with in post-operative cases. They did not go to the surgeon until they were almost inoperable, and after operation they were not in condition to stand the depression which this method of treatment creates. They would quit before the time had arrived when the results should be expected.

There should be consultation between physician, surgeon, roentgenologist, and pathologist in these cases. I do not believe it is proper for a man who has no experience in the use of the X-ray to say to a patient, you go over to Dr. Childs and he will treat you. It may not be a case in which Dr. Childs can offer aid; it may be a case in which treatment will not only not do good but will do harm. The physician should consult with the roentgenologist before he makes his statements.

Speaking of the treatment of malignant or deep seated malignant growths, it is rather interesting to treat some malignant diseases of the abdomen, and I have in mind three cases of colonic malignancy. By getting a blood count, differential and otherwise, at intervals of your treatment, you can certainly have a fair idea of what you are doing to the patient. I believe the doses are more or less empirical even yet, with all the measurement methods which have been devised by well known American and European workers. If you are giving the proper dosage, you will find the leukocyte count gradually fall; the pain will decrease until it is entirely gone, and that will happen after the first or second treatment, and the patient will feel quite comfortable. I have had three patients within the past two years and a half in whom that course has been followed; these patients have been observed by pathologists as well as by myself, and it has been quite gratifying to see that the results have been apparently good, and while the tumor mass in two instances has not entirely disappeared, it has certainly decreased to two-thirds of the size which it was in the beginning.

Casper Frank Hegner, Denver: I have been very much impressed with the results Dr. Childs has obtained from the use of the X-ray. Dr. Childs is modest and very conservative in the estimation of the results he has achieved.

Surgeons have been loth to relinquish any part of their field. They resist invasion of their sacred precincts. The development of modern agencies in the treatment of disease proves that there is no disease, no field that is sacred to any specialty. The note that ran through the paper was not one of invasion; it was a plea for co-operation. The conservative, conscientious man who does not avail himself of every adjunct in the treatment of disease and the alleviation of suffering is not living up to his obligation. Surgeons as well as medical men should cooperate to avail themselves of every possible advantage, of every possible aid, in the treatment of disease.

Samuel B. Childs, Denver (closing): I refrained intentionally from going into many of our own statistics in the treatment of these cases, because in the presentation of a paper in which only fifteen minutes is allowed to cover so extensive a subject as the one now under discussion, we cannot touch upon many of its phases that are of interest, hence I have not given you the results obtained by many well recognized workers who have taken the time to tabulate not

only their own results but the results of others.

I will mention only two cases of inoperable carcinoma of the cervix and vagina that we have treated by Roentgen therapy, and in which marked improvement has taken place; one a patient of Dr. Bagot, and the other a patient of Dr. Ingraham. The patient of Dr. Bagot was inoperable, and the method pursued was the one I advocate and insist upon in these cases; namely, the case was referred by the surgeon and I accepted his report as to the amount of involvement and destruction of tissue that was present. I treated the case and had Dr. Bagot watch its progress and in that way obtained an unbiased opinion. Dr. Bagot reported after a few months that practically all signs of this inoperable cancer, which involved both cervix and vagina, had disappeared; that clinically the woman had gained something like thirty pounds and her general appearance was greatly improved.

The other case was one referred by Dr. Ingraham, upon which he had operated and removed a cancer in the region of the left ovary and uterus, but in which there was a recurrence. He reported to me six months later that the mass had practically disappeared under X-ray therapy and the woman had gained about thirty pounds.

I might go on and give reports of many successful results from Roentgen therapy in cases of uterine hemorrhage and myoma, but as Dr. Pfahler has pointed out, and, as all conservative men insist, there is a limit to what we can expect of the X-ray, and we are not warranted in saying that because a fibroid tumor exists or because there is a uterine hemorrhage, it is necessarily a proper case for X-ray treatment. The cases must be carefully selected, and when this precaution has been taken, as I have already mentioned in my paper, and the cases are watched and examined by a competent gynecologist or surgeon from time to time, the results reported by the roentgenologists can be depended upon for accuracy.

In cases of inoperable carcinoma of the uterus, the improvement that is obtained by the combined use of electro-coagulation and Roentgen or radio-therapy may not be permanent, yet at the present time, in these cases there is no other method of treatment which produces any beneficial results.

DIAGNOSIS OF INCIPIENT TUBERCULOSIS.*

O. M. GILBERT, M.D., BOULDER.

The problem of the diagnosis of tuberculosis looms ever larger on our professional horizon, the more we come to appreciate the part that it is playing, and particularly the part that it is destined to play in the battle which we are waging against the great white plague.

It is obvious that the principal argument for early diagnosis is in the interest of the individual patient, yet it applies with

scarcely less force, perhaps with even greater force, to the public health problem—in other words, to the problem of ultimate control of the disease.

The advance in our understanding of tuberculosis within the past ten or fifteen years has caused a change in our clinical conception of the disease which is little short of revolutionary. The conception which we formerly held of tuberculosis was based on our observation of what we now regard as advanced cases. There is little wonder then that we maintained a pessimistic attitude regarding the treatment and prognosis of the disease.

With the discoveries of Koch and his followers, there dawned a new era, and now the man is no longer regarded as a dreamer who thinks that he foresees the end of tuberculosis—at least as a devastating scourge. The conclusive proof of the causative agent, the studies of its mode of warfare and finally of the processes of immunity by which the human body tends to defend itself against the organism, open up a new vista of possibilities never dreamed of before.

By the aid of extensive autopsy studies, Roentgen rays, and tuberculin tests, we have gradually come to understand that by the time adult life is reached tuberculous infection is almost universal. This fact was first definitely established by the memorable work of Ghon, when he showed that in Vienna fully 90 per cent of the children who came to autopsy from all causes were infected with tuberculosis, even to an anatomically demonstrable degree.

Upon many minds, the first effect of this information is one closely akin to despair, but when we come to consider that only about one-eighth of the population die of the disease, we begin to realize something of the ability which the human body possesses to contend, unaided, against the disease process.

So great is this power that in by far the large majority of instances the disease never makes progress beyond a few isolated tubercles which become more or less completely walled in.

They may remain so throughout the life of the individual, and so far as we know

*Read before the Alabama State Medical Society, April 18, 1916.

cause absolutely no symptoms, and their presence can only be determined by an expert autopsy, the more delicate tuberculin tests, or possibly by the use of the Roentgen-ray.

On the other hand they may at any time, even decades afterwards, under the influence of overwork, bad hygiene, intercurrent disease, or lowered resistance from any other cause, light up anew and create the progressive disease which we ordinarily recognize as tuberculosis.

The former of these conditions we have come to recognize as tuberculous infection without disease. This position I realize is open to criticism on strict pathological grounds, but clinically I think it holds good. The latter condition we recognize as a definite and usually progressive disease-process, tuberculosis. Both of these conditions are now very definitely recognized, but on the border-line between them lies a great class of cases which we are only beginning to approach with an appreciation of its real significance.

This class is represented clinically by the frequent "gripes" with slow recovery, pleurisies, colds and bronchitis of more than a few weeks' duration, asthma, adenitis, dyspepsias, neurasthenia, general run-downness, tachycardia, vaso-motor instability, etc. In fact I believe that we are only beginning to realize the part which this semi-latent or, as some of the German authorities designate it, latent-active, tuberculous process plays in the ordinary complaints of our every-day experience.

Quite naturally you may ask, as did Dr. John B. Hawes 2nd, of Boston, recently, "How can you prove that these vague states of ill health are due to tuberculosis?" I frankly admit that it is a difficult or impossible thing to prove as a general principle. However, my contention is that, if we give the matter close and systematic study, we can establish it on as firm a foundation as that upon which most of our clinical conceptions rest.

I propose to consider the evidence from five points of view: first, clinical history; second, physical findings; third, tuberculin

reactions; fourth, Roentgen pictures; fifth, autopsy findings.

In order to emphasize the clinical history let us call to mind one of the numerous patients that we see, who, perhaps after a more or less definite house exposure to tuberculosis in childhood, begins to have bronchial colds of undue frequency and persistency, often accompanied by a little afternoon rise of temperature for several weeks, has two or more attacks of "typhoid fever" during adolescence from which recovery is slow, several attacks of "grippe", which are sometimes accompanied by pleurisy and perhaps bronchitis, complains from time to time of vague digestive disturbances which do not correspond to any of the recognized pathological types, and gets badly run-down upon several occasions, but picks up more or less promptly upon going into the hills for an outing. At the age of thirty-five or forty, our patient begins to enjoy a more settled state of health. Except for his dyspepsia and a certain amount of neurasthenia, he may in general be regarded and may regard himself as an ordinarily healthy man, and passes several critical examinations for life insurance. He has some bronchitis in his old age, and dies a "natural death" at the age of seventy or seventy-five.

Imagine the surprise when at autopsy we find that in addition to the usual calcareous glands and healed tubercles about the lung roots, there is a rather extensive chronic peribronchial tuberculosis, and several patches in the lungs, manifesting various degrees of healing, but capable of discharging into the system considerable quantities of toxins; in other words, here is spread before us the battlefield of three-score years of warfare between the interned infection and the host; and we understand why we had now and then smelt smoke.

Let us assume that we could go back into the early adult life of this patient, and have the benefit of an accurate physical examination, Roentgen picture and tuberculin tests; what information should we probably have gotten? The physical examination might or might not have aided us. We might have found slight limitations of or inequalities in the expansion—often best represented by

limitation of the diaphragmatic excursion, on one side or the other; a narrowing or obscuration of Kronig's fields; very slight impairment of resonance—especially over the lung roots posteriorly, or in Rivière's bands passing toward the apex; possibly spasticity of the muscles over certain areas (Pottenger), increase in the whispered voice sounds, slightly heightened pitch, and prolongation of the expiratory sound, possibly only raised pitch of the inspiratory sound. To elicit these slight changes in the respective phases of respiration, it is helpful to make use of Grancher's "single-phase auscultation", that is comparing inspiration on one side with inspiration on the other; then dealing with expiration in the same manner. We probably should have found no râles, although there might have been a few crackles brought out by a slight cough at the end of expiration, followed by a deep inspiration—latent râles.

H. A. Bray, of the New York State Sanatorium for incipient tuberculosis, (Journal A. M. A., March 11, 1916) has recently emphasized the importance of this "latent râle", and finds it more commonly accompanying the cough or in the short period of the expiratory phase remaining after the cough, rather than during the inspiration which follows. He explains this on the ground of the rise of intra-pulmonary pressure during the cough, with the consequent forcing of air into the atelectatic portions of the lung.

The radiograph would have shown us the peribronchial thickening, most of the foci in the lung parenchyma with varying degrees of fibroidization, perhaps some pleural thickening and limitation of the descent of the diaphragm, as well as lymphatic glands hypertrophied, fibroidized or calcified. In some instances successive pictures would show a progress of the disease which could not be demonstrated by physical examination.

The subcutaneous tuberculin test probably would have given us a general reaction with temperature of one hundred or more, reaction at the site of the injection and focal reaction, as manifested by localized pain in the chest, cough and perhaps the appearance of râles about the principal foci of infection.

The von Pirquet test would almost surely

have been positive, but that would not have helped us much, since it only indicates positively the presence of tuberculous infection, and not tuberculous disease. However, by taking into consideration the degree of reaction as well as the time of the reaction, we can gain some idea of the tuberculin hypersensitiveness; which is to a certain extent a criterion of activity. I have found the intracutaneous test more reliable for this purpose.

The ophthalmic test is regarded by many as standing midway between the cutaneous and the subcutaneous tests in usefulness, since it is thought not to react in purely quiescent lesions. I have largely abandoned it in favor of the intracutaneous method.

However, it must be borne in mind, as emphasized by Hammon and Wolman, that there has never yet been devised a refinement of the tuberculin test which will definitely distinguish active from inactive tuberculosis.

The albumin content of the sputum would very probably not have helped us much, since there is seldom a noteworthy increase until the case is sufficiently advanced to permit of diagnosis by other means.

The complement-fixation test, which for a time seemed to promise so much, has not yielded the information which we at one time hoped that it would, but we have yet to hear from the work which is being done by Baldwin and Petroff along this line, at Saranac Lake. However, after we had made use of the knowledge at our disposal, we might have to admit our inability to make a diagnosis at this stage, except as a probability. To await the appearance of tubercle bacilli in the sputum would in all probability have been to miss our best opportunity for treatment.

But one may well ask: What is the difference, since he lived out his "three-score and ten", and died of something else? Simply this, that he is a representative of that large class out of which the great bulk of our progressive tuberculosis develops, and it was simply good fortune that he did not cross the narrow border-line between semi-latent and active tuberculosis.

Suppose that this man at the age of 35

had undergone some great physical and mental strain under unhygienic conditions, with or without opportunity for reinfection from without. What would probably have happened? There would have been a flood of toxins poured into his system, resulting in an anaphylactic shock, which would have so lowered his resistance that these long pent-up organisms, or the fresh one just introduced, would have gotten in their work, and we should have had a lighting up of old foci as well as the formation of new ones, and he would have proceeded into the state commonly known as incipient phthisis, probably passing into a state of progress with which we are unable to cope before we are able to recognize the disease.

During the five or ten years of life perhaps left to him, he might have become an active disseminator of the disease among those of the rising generations with whom he chanced to come into intimate and continuous contact, and they in their turn, passing through the same experience, pass it on to the next, and to the next; like the child's dominoes which he has set on end in a row; he gives the first one a push and the others topple, one after another as long as there is one left to be upset—all from the impetus given to one domino.

Now, what might have been done to prevent this series of calamities which have been set in motion? Might we not, by recognizing the potential peril which existed in our subject, have prevented this outbreak, and thereby intercepted this endless chain of infection with all its attendant woe?

This, it appeals to me, is one of the heaviest responsibilities resting on the members of the medical profession today.

Permit me here to quote a few case histories from my records, illustrating the type of case which I wish to emphasize.

Case One.—O. G., 43, male, married. Family history not very good. Paternal grandmother, one maternal aunt, uncle and several cousins died of tuberculosis. Considerable family tendency to colds, bronchitis and pleuritis.

Patient during his childhood had an intimate and continuous exposure to the tuberculous aunt. During adolescence he devel-

oped a tendency to obstinate winter colds, had several attacks of pleurisy, and during his last year in college he was very much run down, and had a somewhat persistent hacking cough. Between the ages of 25 and 37 he had four attacks of grippe from which convalescence was slow, accompanied by cough and left-sided pleurisy. He also had very vague dyspeptic symptoms very often. At the age of 37, after one of these "grippal attacks" of slightly more than usual severity, with the usual pleurisy in the left side, tubercle bacilli were found in the sputum, and fever persisted for six or seven weeks. Radiograph showed many old healed foci in the right lung, and several more recent in the left. Active physical signs were present about one of these foci for several months.

Six months rest in the fresh air, followed by graduated exercise, brought about an apparently complete arrest, and he has been free from the above-mentioned symptoms, and has enjoyed better health than at any time since childhood.

It is needless to say that, but for the alertness of his physician, this attack would have been passed over as the others had been, as "grippe", and in all probability he would have gone on until "incipient tuberculosis" developed.

Case Two.—Mrs. E. J. V., age 34, married. Maternal grandmother died of tuberculosis, and patient was exposed to her in childhood. Her only brother coughs a great deal.

Patient was not well nor strong up to the age of 16, but thereafter was quite strong till 25 years of age, at which time she had grippe with cough and was badly run down for three months. Same experience the next winter with the addition of pain in the right side. Fully recovered during summer. Had a recurrence each winter since except two. In spite of these, she has remained in good general health between times.

Shortly after marriage—about a year ago—she was seen in one of these attacks, sent to a hospital and a close study made of her case. Slight fever and cough persisted for two months; there was a very definite area of infiltration above the right root and a less

extensive one below the left root posteriorly. These as well as a number of well-healed foci were shown by the X-ray. Marked local, general and focal reaction followed a small dose of tuberculin. With rest and fresh air, she has gradually regained her usual state of health, and has so far this year escaped her periodic exacerbation.

Case Three.—W. B., aged 32, married. Had a protracted exposure to a fatal case of "chronic bronchitis" in childhood, but remained quite well until adolescence, during which he had "grippe" several times, which twice at least was followed by pleurisy and pains in the right side. While in college he became badly run down toward the close of the school year upon two occasions, but rallied well during vacation and, but for several attacks of atypical malaria, he continued quite well until after his marriage, which took place about a year before his death.

While on his wedding trip, he "took cold", became very much run down, and a few months later progressive tuberculosis was diagnosed, involving both lungs, and he died within a year of the first outspoken symptoms of tuberculosis. Yet who would doubt its pre-existence?

I wish now to relate the history of two cases of this type, in which the diagnosis was made before an acute outbreak had occurred, and in both of which I believe such a calamity will in all probability be averted.

Case Four.—W. A. L., age 26, bank clerk. Family history good. Patient was delicate and nervous as a child, especially from 8 to 10 years of age, and had a "nervous, hacking cough", which yielded to rest and fresh air. At 22 had functional heart trouble, which responded to rest and fresh air. The following Christmas and each winter since has had grippe and some prostration for several weeks following. These attacks were seldom accompanied by cough. The last one did not clear up so promptly as usual, and his physician, suspecting tuberculosis, sent him to an internist for diagnosis. Slight but indisputable evidences of tuberculosis were found, of the type mentioned above, including a marked focal reaction to 1 mg. of tuberculin.

Case Five.—Mrs. W. J. M., age 32, house-

wife. Father died of tuberculosis and mother has chronic cough. Patient was intimately exposed to her father up to the time of his death, which occurred when she was 11 years old.

At 15 years of age she began to have frequent attacks of pleurisy, but was seldom laid up. Each spring during high school she would get badly run down, but seldom had to leave school, and did not cough noticeably. Taught country school at 17, and was worse run down than ever. Married shortly after close of school year, and was very weak while carrying and nursing her first child, and less so with each of the succeeding three. Health has been somewhat better during the past two and a half years, but five months ago became anemic and sometime afterward began to cough slightly, with occasional rise of temperature to 99°.

Examination showed only the minimum of physical signs of the type mentioned, with just an occasional mucous click. Roentgen-ray showed slight but definite invasion of lung tissue, and a small dose of tuberculin brought out definite râles.

Both of the above cases were examined and referred by Drs. Harry Everett and John Mills Mayhew, of Lincoln, Nebraska, and to my mind represent the ideal in pulmonary diagnosis.

The progress of these two cases and of a considerable number of similar ones is such as to justify the hope that diagnosis in this stage will mark a long stride in advance in our effort to master tuberculosis.

I wish to emphasize that the most important single criterion upon which to base our suspicion of tuberculosis is the history, and I quote with approval the statement recently made by Hawes: "It is too much to expect every busy general practitioner to become an expert in the diagnosis of tuberculosis, but it is not too much to expect that we take note of the significance of a history and diagnose that something needs diagnosing."

However, I do not wish to be understood as holding that all cases of tuberculosis begin in the manner which I have been describing. Many of them come like "a bolt out of a clear sky". A previously perfectly healthy person may be stricken without warning, and

progress to a fatal issue, although never previously having manifested a single symptom that could possibly have been attributed to tuberculosis.

There is abundant ground for support of the view that a patient accumulates a degree of immunity through these chronic intermittent processes.

Modern pathology seems to support the idea that, while an immunizing process is our best friend up to a certain point, once this unknown limit is exceeded it becomes the instrument of our certain destruction.

Since it is further recognized that the height of the immunizing process is raised by every procedure which tends to increase the general resistance of the patient, it naturally follows that it behoves us to do everything within our power to recognize the disease at the earliest possible moment. By so doing every known measure which tends to throw victory on to the side of the patient may be adopted before the disease has approached the limit of protection conferred by the immunizing process.

So let us all pull together with this ideal as our goal, to the end that this terrible scourge may cease to take its awful toll of human life.

News Notes

The speakers at the Albuquerque Sectional Conference on Tuberculosis held in Albuquerque, New Mexico, October 12th and 13th, included Dr. Livingston Farrand, president of the University of Colorado, Dr. Gerald Webb of Colorado Springs, Dr. John Chase Jr. of Denver, and Drs. Gillett and A. M. Forster of Colorado Springs. Dr. Farrand was president of the Conference.

Dr. Charles E. Fisher of Sterling has filed a petition as candidate for the state legislature, as an independent nominee.

Newspaper reports concerning Dr. Charles A. Powers, who has been working in the American ambulance in Paris, France, speak of the Doctor as having engaged in extensive plastic work for the making of new noses, chins and mouths. Dr. Powers writes to Colorado friends that he is enjoying excellent health in spite of hard work.

Dr. R. W. Corwin, Chief Surgeon of the Colorado Fuel and Iron Co. Hospital at Pueblo, has just returned from Paris, France, where he has been working in war surgery.

Dr. John V. Solandt of Hayden died from injuries received in an automobile accident on September 26th. Dr. Solandt, who was 47 years of age, took his medical course in the University of Denver, graduating in 1898. He had practiced for eighteen years at Hayden, where he had held various public offices.

Dr. E. L. Morrow of Oak Creek was married in Denver on September 20th to Miss Helen Hugill, who had for some time acted as superintendent nurse of Dr. Morrow's hospital.

On September 27th Dr. R. W. Corwin gave an interesting address before a Pueblo audience on his experiences at the war front in France. Dr. Corwin's lecture was illustrated with stereopticon slides and motion pictures which he had secured in France.

Dr. C. B. Warren, formerly of Denver, has located at Gill.

Dr. Saling Simon of Denver read a paper on "Artificial Pneumothorax" before the Medical Association of the Southwest, which met at Fort Smith, Arkansas, on October 2nd, 3rd, and 4th.

During the Glenwood Springs meeting Dr. C. E. Tennant of Denver suffered a fall from a horse which he was riding; but only after his return to Denver did he discover that he had sustained a Colles' fracture of the wrist.

The insanity of the jury system in determining the sanity or insanity of patients is suggested by the results of the recent trial of a patient in the Denver courts. When an individual with decided indications of being troubled with delusions of persecution, and other signs of paranoia, is unhesitatingly declared insane by a commission of experts, and is subsequently acquitted by a jury of laymen, the logical conclusion is that the law is an ass. A fitting Nemesis to such a case would be for one of the jurymen later to become a victim of the insane person.

At a dinner held in connection with the inspection of the new Receiving Hospital of the Modern Woodmen of America Sanatorium near Colorado Springs on September 16th, short addresses were made by Drs. E. A. Boyd, L. H. McKinnie, H. C. Moses, C. O. Giese, and A. C. Magruder. The new hospital cost one hundred and sixty-six thousand dollars, and has been under construction for the past year.

Dr. and Mrs. D. C. Mayhew, after living in Colorado Springs for sixteen years, have left to reside permanently in Detroit. Shortly before their departure, they were given an informal reception by the El Paso County Medical Society at the library of the Society in the Elks' Home.

A new ordinance passed by the Denver City Council for the regulation of automobile traffic exempts physicians and surgeons who are answering emergency calls from the usual speed limitations, placing them in the same class with the police and fire cars and apparatus.

Dr. Edward Augustus Floyd, said to have been a personal friend of Abraham Lincoln, died at his home in Aurora on September 28th, at the age of 88 years. Dr. Floyd was born in Medford, Mass. He came to Colorado ten years ago.

The Governors of the New York Skin and Cancer Hospital announce that Dr. L. Duncan Bulkley, assisted by the attending staff, will give the eighteenth series of clinical lectures on diseases of the skin in the Out-Patient Hall of the Hospital on Wednesday afternoons, beginning November 1st, 1916, at 4:15 o'clock.

The place of the coming meeting of the Western Surgical Association on December 15th and 16th, 1916, has been changed from Indianapolis, Indiana, to St. Paul, Minnesota, largely on account of the absence of Dr. J. Riles Eastman, chairman of the Executive Council, who is in Austria with the American surgical unit and will not be able to return in December.

Dr. F. E. Wallace of Pueblo has just received a further appointment as oculist-aurist to the Colorado.

(Continued on page 320.)

Minutes of the House of Delegates of the Forty-Sixth Annual Meeting of the Colorado State Medical Society

Held at Denver, September 5, 6, and 7, 1916.

First Meeting of the House of Delegates, September 4, 1916

The House of Delegates met at the Hotel Colorado and was called to order at 10:20 p. m. by the President, Dr. John R. Espey, Trinidad.

The Secretary called the roll, and announced a quorum present.

Dr. W. A. Jayne moved that the House of Delegates proceed with the business in hand.

Seconded by Dr. Work and carried.

The reading of the minutes of the 1915 session was called for.

Dr. Jayne moved that inasmuch as these minutes had been published in *Colorado Medicine* for November, 1915, the reading of them be dispensed with.

Seconded by Dr. Arndt and carried.

The President announced the following reference committees:

Committee on Reports of Committees—T. E. Carmody, C. O. Giese, H. A. Smith.

Committee on Appropriations—W. A. Jayne, Edw. Burkhard, R. W. Arndt.

Committee on Reports of Officers—Philip Hillkowitz, Fritz Lassen, J. C. Chipman.

Committee on Miscellaneous Business—H. S. Henderson, A. S. Abdun-Nur, C. A. Ringle.

Committee on Medical Defense—Hubert Work, Leonard Freeman, W. A. Jayne.

Auditing Committee—Edw. Burkhard, R. W. Arndt.

The Secretary presented the report of the Committee on Credentials as follows:

REPORT OF THE COMMITTEE ON CREDENTIALS.

The hereinafter named constituent county societies had on April the first, 1916, the number of paid-up members in good standing as indicated by the number after the name, and are therefore entitled to the number of delegates as per numeral after the name and number of members:

Society	Members.	Delegates.
Boulder county	44	2
Crowley county	7	1
Delta county	12	1
Denver city and county	305	13
El Paso county	81	4
Fremont county	21	1
Garfield county	11	1
Huerfano county	10	1
Lake county	19	1
Larimer county	13	1
Las Animas county	25	1
Mesa county	23	1
Montrose county	13	1
Morgan county	8	1
Northeastern Colorado	11	1
Otero county	16	1
Prowers county	9	1

Pueblo county	46	2
Routt county	7	1
San Juan county	6	1
San Luis Valley	22	1
Teller county	9	1
Weld county	26	2

The delegates and alternates have been certified by the respective secretaries, and we therefore respectfully recommend the seating of such delegates as named on the attached certified lists.

Respectfully submitted,

W. H. HALLEY,
CRUM EPLER,

It was moved that the report be accepted as read.

Seconded and carried.

The Secretary presented his report, which was referred to the Reference Committee on Reports of Officers.

The report is as follows:

ANNUAL REPORT OF SECRETARY.

In this, my second annual report to you, I have the following to submit:

My office is the step between the membership and the American Medical Association. To be able to accurately and efficiently discharge the duties of the office, much depends upon the membership and officers of the constituent societies. The welfare of the county organizations depends to a large degree upon the efficiency of the local secretaries, and until they anticipate the needs of their membership the individual members cannot expect the advantages afforded by the State Society and the A. M. A. I desire to mention in a commendatory way the improvement the various constituent secretaries have made during the past year in their efforts to cooperate with me. Repeated letters have been sent to them, and while some have been short and curt, they were not personal, but business letters.

That you may have an idea of the volume of business transacted in my office, I will state that more than five thousand pieces of mail have gone out since last annual meeting.

The compiled minutes and transactions of the State Society from 1892 to and including 1915, which were furnished at my request last year, have proven to be of inestimable value. I recommend that in the future files be kept and that the proceedings be bound in volumes every five years. I further recommend, that the names of all members in good standing be published alphabetically each year in the issue of *Colorado Medicine* that contains the proceedings of the annual meeting.

In the absence of a by-law covering the case, I made a ruling that all physicians who were re-instated or elected to membership following the annual meeting, and who had paid their dues and were reported before the first of the year, would be enrolled as active members for 1916. This

seems to have met with popular approval, in that thirty-eight were reinstated last fall.

Under literal interpretation of the by-laws, I notified each constituent secretary that the apportionment of delegates for this meeting would be made upon the basis of the paid membership of April first. This resulted in much good. All the constituent societies that are in good standing today were paid up by April first, whereas in the past many of them would not be paid until just before the annual meeting. In addition this permits the work of the office to be effectively carried on. Further, the apportionment of delegates to the A. M. A. is made on the Secretary's report of April first.

Prompted by many letters last year asking for receipts for dues, and inquiring as to whether the writers were members of the State Society or not, I departed from the usual custom this year, and issued certificates of membership, similar to those furnished by the American Medical Association. These certificates were sent direct to the members as soon as their names were reported to my office. The result has been that there has not been a single inquiry.

The program for this meeting was completed and mailed direct to each member twenty days before this meeting as required by our by-laws. This program is not so artistic as it has been in the past, from necessity, as twice the number had to be printed and mailed from the same sized appropriation.

Only one opportunity presented itself to use any of the fund set aside last year for organization work. This was a call from Routt County Medical Society for some one to represent the state Medical Society at a booster's meeting which was held in Steamboat Springs. Dr. A. J. Marklev kindly responded to the call. There is much need for organization work throughout the state, which is evidenced by the fact that there are but twenty-three county and district societies in the state and a little less than 48 per cent of the physicians in the state belong to the Society. I respectfully suggest that an appropriation be made again this year, and that the incoming president appoint an organizer to assist the Secretary in an effort to increase the membership.

It was impossible to make retroactive that part of the report of the Reference Committee on Miscellaneous Business relative to binding copies of Colorado Medicine, because there was a shortage of some numbers of volume XII. The number who subscribed for bound volumes of volume XIII, was only five. I recommend that in the future any who wish their volume bound may have it done through the State Society at actual cost, by furnishing the numbers.

Communications in re Medical Reserve Corps and Social Insurance are herewith presented for reference to the proper committees.

The matter of the referendum on medical defense carried and the report is in my hands for proper reference.

Some of our county societies are carrying a list of non-resident members, some of whom live in counties where smaller societies exist.

In view of the ever growing demand in our meetings for illustrated work by the stereopticon, I recommend that the Secretary be instructed to buy an instrument suitable for this work, and that an appropriation be set aside for the payment for the same.

During the eleven months just past, Bent and Tri-County Medical Societies have been dropped

from the roll of constituents. In spite of the fact that we have lost these societies, the membership of the State Society has increased twenty members. Of the twenty-three societies now in good standing, nine of them gained forty-nine members, five lost seven members and nine neither gained or lost.

The following statement shows the membership of the constituent societies and the moneys collected:

Society.	Members.	Collections.
Paid, 1916—		
1 Boulder county	46	\$ 138.00
2 Crowley county	7	21.00
3 Delta county	12	36.00
4 Denver city and Co..	331	993.00
5 El Paso county	84	252.00
6 Fremont county	22	66.00
7 Huerfano county	10	30.00
8 Garfield county	14	42.00
9 Lake county	20	60.00
10 Larimer county	20	60.00
11 Las Animas county..	26	78.00
12 Mesa county	23	69.00
13 Montrose county	13	39.00
14 Morgan county	8	24.00
15 Northeastern Colo...	13	39.00
16 Otero county	16	48.00
17 Prowers county	11	33.00
18 Pueblo county	58	174.00
19 Routt county	7	21.00
20 San Juan county....	6	18.00
21 San Luis Valley....	22	66.00
22 Teller county	13	39.00
23 Weld county	31	93.00
Unattached	4	12.00
	817	\$2,451.00
By transfer	2	
Honorary	11	

Total membership..830

Summary—

Collected from county secretaries	\$2,451.00	
Collected from Colorado Medicine	677.15	
Other sources	2.00	\$3,130.15

Turned over to Treasurer (receipt attached)	\$3,130.15
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Respectfully submitted,

CRUM EPLER, Secretary.

The Treasurer, Dr. W. A. Sedwick, presented his report, which was referred to the Auditing Committee.

The report is as follows:

ANNUAL REPORT OF TREASURER.

From October 6, 1915, to September 4, 1916.

Balance on hand Oct. 6, 1915.	\$2,617.45
Received from Secretary, dues.	\$2,453.00
Received from Secretary Colorado Medicine	677.15
Received from interest earned.	73.66
	3,203.81

Total \$5,821.26

Disbursements	\$2,972.55
Cash Balance	\$2,848.71

Disbursements—Journal Maintenance.

Western Newspaper Union for eleven months	\$1,420.78
Western Press Clipping Co. for eleven months	22.00

Denver delivery of Journal for eleven months	27.50
B. F. Stapleton, postmaster, postage	25.00
Dr. W. H. Crisp, editor, eleven months	275.00
A. S. Carter, rubber stamp....	.50
Carson-Harper Co., stationery.	16.25
Cocks-Clark Co., engraving....	3.00

\$1,790.03

Library Appropriation.

Clement R. Troth, books.....\$	38.35
Lea & Febiger, books.....	14.18
MacMillan & Co., books.....	21.56
Denver Book Exchange, books	2.50
American Medical Association, books	2.40
G. E. Stechert & Co., books....	20.44
Paul B. Hoeber, books.....	15.60
Clement R. Troth, books.....	33.84

\$ 148.87

General Expenses.

Dr. W. T. Councilman (invited guest)	\$ 140.00
Dr. J. L. Yates (invited guest)	75.00
Wm. B. Whitford, balance, stenographer's report	138.55
Dr. A. J. Markley, organizing, Steamboat Springs	24.00
Rock Island system, transportation stenographer to Glenwood Springs	40.00
Wm. B. Whitford, advance report Glenwood Springs meeting	45.00

\$ 462.55

Incidentals and Sundries.

H. B. Smith, stereopticon.....\$	20.00
O'Brien Printing Co., stamped envelopes, letter heads, record cards, membership certificates, stationery, programs, etc.	154.25
Publishers' Press & Bindery Co.	1.75
W. H. Haines, sundries.....	2.20
Dr. Crum Epler, postage and telephone	64.65
Riverside Printing Co.....	7.25
A. M. A. Directory.....	8.00
Franklin Press Co., (file).....	38.00

\$ 296.10

Secretary.

Dr. Crum Epler, salary.....\$	200.00
Miss Anna Rice, stenography and clerical assistance.....	75.00

\$ 275.00

Total disbursements, \$2,972.55.

Request that a depository be made by the house.

Respectfully submitted,

W. A. SEDWICK, Treasurer.

Dr. H. R. McGraw, Denver, presented the following report as Delegate to the American Medical Association:

REPORT OF THE DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION.

The sixty-seventh annual session of the Association was held in Detroit June 13, 14, 15 and 16, 1916. It was a very successful meeting, not

only from the standpoint of attendance, but also from the very important business transacted in the House of Delegates, the scientific program, the scientific exhibits and the social entertainments. The total registration at this meeting was 4,586. The Secretary reports a fellowship roll of 43,181, an increase over last year of 815.

Two very important changes in the Constitution of the Association were effected at this meeting. Heretofore the House of Delegates and the Scientific Assembly practically began their sessions at the same time, thereby depriving the Delegates of attendance at the scientific sessions. Under the new ruling the House of Delegates meets two days preceding the opening of the Scientific Assembly, thus giving the House of Delegates two full days in which to complete its work before the general meeting opens, which will be on Wednesday and continuing through Friday. Another important change in the Constitution was that of creating the office of Speaker of the House of Delegates. This was recommended by the Judicial Council and passed by the House of Delegates. The duties of the Speaker are governed by parliamentary usage, such as presiding over the sessions of the House of Delegates, appointing committees, etc.

All over the country great interest is being manifested along the lines of social insurance. Workmen's Compensation Acts last year increased from twenty-three to thirty-three states. The methods of compensating the injured vary in the different states; the law of Wyoming is interesting in its method of administration, being a straight insurance measure, all indemnities being paid out of a state fund made up by assessments imposed on the employers. In Pennsylvania, Montana and Colorado there are state funds created. Indiana, Oklahoma and Maine permit voluntary benefit schemes as substitutes for the statutory provisions. Alaska confines its compensation law to the mining industry only, and Alaska and Wyoming do not provide medical aid. Medical aid is provided in all other states and territories.

At this time there is considerable agitation in reference to compulsory sickness insurance and we feel that the time is not far distant when the states will provide an insurance for all forms of sickness, following which, in all probability, will come insurance for widows and orphans. There is at present a committee of the American Medical Association whose duties are to gather statistics and collect data with reference to social insurance and to serve as a bureau of information for the medical profession on the various forms of social insurance, both in Europe and the United States, and it is advised by the American Medical Association, and we recommend, that a committee of three from this Society be appointed to work in conjunction with the committee of the American Medical Association.

The scientific sessions were all exceedingly well attended and the papers were all of high scientific value. The scientific exhibits were equal or perhaps superior to any in previous years. Dr. Frank Wynn of Indiana, Chairman of the Committee of Scientific Exhibits, certainly deserves a great deal of credit for his efforts in securing these excellent scientific exhibits.

Dr. Charles Mayo of Rochester, Minnesota, was elected President and the next meeting of the Association will be held in New York City. Colorado was very well represented at this meeting.

there being forty-seven registered from this state.

To the high honor and responsible position of Speaker of the House of Delegates our esteemed colleague, Dr. Hubert Work of Pueblo, was unanimously elected. He was nominated by Dr. McKinney of Colorado Springs. Dr. H. A. Black of Pueblo was elected on the Judicial Council of the American Medical Association, one of the most important committees of the Association. Dr. Horace G. Wetherill of Denver was elected to represent the section on Obstetrics, Gynecology and Abdominal Surgery. Dr. Robert Levy of Denver was elected to represent the section of Laryngology, Otology and Rhinology. Dr. George A. Moleen of Denver, was elected to represent the section on Nervous and Mental Diseases. From the above you will plainly see that Colorado's standing in the American Medical Association is one of which we should feel justly proud, and the well-earned honors in this Association were very liberally given to our associates.

H. R. MCGRAW,
L. H. MCKINNIE.

Dr. Hubert Work moved that the report be received, accepted and made a matter of record.

Seconded and carried.

Dr. W. A. Jayne, Denver, presented the following report of the Library Committee and moved that it be referred to the Committee on Appropriations.

Seconded and carried.

REPORT OF THE LIBRARY COMMITTEE.

Your Committee entrusted with the expenditure of the appropriation of \$150.00 for the purchase of books for the library beg to report as follows:

Thirty-nine books were purchased during the year at an expense of \$150.82, an excess over the appropriation of \$0.82, which we trust will be allowed by the Society.

The number of volumes belonging to the Society:

October 1, 1915.....	635
Books purchased during the year.....	39
Books received from Colorado Medicine after review	72

Total number of books in the library Sept.

1, 1916746

The library is of greater value each year and its facilities are being appreciated more and more by our members.

During the past year the calls upon the library from members outside of Denver have been frequent and have come from all parts of the state, including the towns of Pueblo, Golden, Colorado Springs, Boulder, Trinidad, Pitkin, Salida, Greeley and Ouray.

Your Committee believes that money appropriated for library purposes results in the greatest possible good to our membership and would not only request the continuance of an appropriation, but would ask that the appropriation be made \$200.00 for the coming year, as was the case during the previous year.

Respectfully submitted,

W. A. JAYNE,
O. M. SHERE.

The report of the Committee on Necrology was called for.

It was moved and seconded that this report be presented to the general meeting of the Society. Carried.

The report of the Committee on Scientific Work was called for and Dr. Jayne, a member of this Committee, stated that the Committee had nothing to report other than the program, which spoke for itself.

Dr. W. W. Crook, Glenwood Springs, presented the following:

REPORT OF THE LOCAL COMMITTEE OF ARRANGEMENTS.

The Committee of Arrangements wishes to report that arrangements were made for the holding of the state meeting at the Hotel Colorado and that everything is in readiness for the meeting.

The Entertainment Committee has arranged entertainments at the pool and other places for the wives and members of the Association. The program has been given to the State Secretary, which he has published.

Respectfully,

W. W. CROOK, Chairman of the Committee.

The Secretary read the Report of the Committee to Cooperate with the State Pharmacal Association, which was referred to the Reference Committee on Reports of Committees.

The report is as follows:

REPORT OF THE COMMITTEE TO COOPERATE WITH THE STATE PHARMACAL ASSOCIATION.

The Committee to Cooperate with the State Pharmacal Association has held no formal meeting. The Chairman met with members of the Pharmacists' and Wholesale Druggists' Associations in discussing the position to be taken regarding alcohol under the state prohibition law, but no formal action was taken, as the state authorities refused to discuss or make any rulings in the matter.

Respectfully submitted,

C. E. EDSON, Chairman.

Dr. W. A. Jayne presented the report of the Committee on Revision of the Constitution and By-Laws, as follows:

REPORT OF THE COMMITTEE ON CONSTITUTION AND BY-LAWS.

Your committee appointed at the last session of this House for the purpose of recommending amendments to the Constitution and By-Laws of this Society has considered the needs of the Society in a general manner and many changes in both Constitution and By-Laws are recommended. For the most part these are mere changes in wording, giving the various sections more directness and effect. Very few radical changes are recommended.

The committee begs to report in detail as follows:

Throughout the Constitution and By-Laws make such changes as necessary that the word "session" shall be used for the annual gathering of the Society covering the several days, and the word "meeting" for the daily gatherings of the Society, House of Delegates or sections during the annual gathering.

Constitution.

Article III. First line, after the word "societies," insert the words "of Colorado," and after the last sentence add "Only one constituent society shall be chartered in any one county or district"; and the section as amended shall read: "Those county and district medical societies of Colorado which are organized in accordance with the general plan of the organization of this Society and the American Medical Association, and

are in affiliation with and hold charter from this Society shall be constituent societies. Only one constituent society shall be chartered in any one county or district."

Article IV. Fourth line, after the word "honorary," insert the words "and associate"; and the section as amended shall read: "The membership of this Society shall consist of members in good standing of the constituent county and district medical societies of Colorado, and such honorary and associate members as may be elected in accordance with the by-laws hereinafter provided."

Article VI (now Article VII). Change to read as follows: "The Society shall hold an annual session at the time and place fixed by the House of Delegates; it is provided, however, that the time and place of the session may be changed for good and sufficient reasons by the unanimous action of the President, First Vice-President and Secretary at any time prior to one month of the time selected for the session."

Article VII (now Article VI). Transpose the words "of the Society" from the second line to the first line after the word "section", omit the word "the" before the word "scientific", and substitute the word "and" for "or" in the third line; and the section as amended shall read:

"The general meetings and sections of the Society shall be devoted to scientific work. The power to create and discontinue sections shall be vested in the House of Delegates."

Article VIII. Section 1. Strike out the word "ten" in the fourth line and substitute therefor the word "five"; and the section as amended shall read:

"Section 1. The officers of this Society shall be a President, four Vice-Presidents, a Secretary and a Treasurer, who shall constitute the trustees as provided in the certificate of incorporation, and five councillors."

Section 2. Strike out all of the first sentence after the word "three" in the third line to and including the word "year" in the sixth line and insert therefor "and the councillors shall, after the election in 1917 be elected for terms of five years each"; and the section as amended shall read:

"Section 2. The President and Vice-Presidents shall be elected for a term of one year, the Secretary and Treasurer for three, and the councillors shall, after the election in 1917, be elected for terms of five years each. All of these officers shall serve until their successors are elected and installed."

Section 3. Strike out all the second sentence and substitute, "No member of the House of Delegates shall be eligible for any office named in this article during the term for which he is elected, except that of Secretary or Treasurer. No member of the House may hold any such office, except the presiding officer (who shall be a member of the House ex-officio) and the Secretary and Treasurer. No officer or delegate to the American Medical Association may be elected to any other office during the term for which he was elected"; and the section as amended shall read:

"Section 3. The officers shall be elected on the morning of the last day of each annual session. No member of the House of Delegates shall be eligible for any office named in this article during the term for which he is elected, except that of Secretary or Treasurer. No member of the House may hold any such office except the presiding officer (who shall be a member of the House ex-officio) and the Secretary and Treas-

urer. No officer or delegate to the American Medical Association may be elected to any other office during the term for which he was elected. No person shall be elected to any such office who is not in actual attendance upon that annual session."

Your committee recommends, in accordance with the rule concerning amendments, that the above amendments to the Constitution be submitted to the constituent societies for approval preliminary to their consideration for adoption by this Society at its next annual session.

Proposed Amendments to By-Laws.

Chapter 1. Section 2. Omit the second sentence, and the section as amended shall read:

"Section 2. Honorary membership may be conferred upon distinguished physicians residing outside of the state of Colorado at any general meeting by a two-thirds vote of all members registered in attendance at the meeting."

Section 3. Omit the words "retired" and "our" from the second line; and the section as amended shall read:

"Section 3. Associate members shall consist of honorary members of constituent societies."

Section 4. Make new section to read:

Section 4. Honorary and associate members shall pay no dues, they shall have no vote and shall not be eligible for any office."

Chapter III. Title to read, "Special Meetings." Omit present section 1 and renumber present section 2 as section 1. First line omit the words "society or"; second line, after the word "by" insert the words, "the direction of"; third line, after the word "members" add the words, "presented to the President or Secretary"; and the section as amended shall read:

"Special Meetings."

"Section 1. Special meetings of the House of Delegates shall be called by the direction of the President at his discretion or upon a petition of twenty members presented to the President or Secretary. Notice for a special meeting of the House of Delegates must be mailed to each delegate at least fifteen days before such special meeting is to be held and the notice shall state the time, place and object of such special meeting, and no other business shall be transacted thereat."

Chapter IV. Section 2. Third line. Omit the word "and" after the word "investigation" and insert the words "of and to make"; and the section as amended shall read:

"Section 2. The general meeting shall have authority to create committees or commissions for investigation of and to make report on medical matters of special interest to the profession or the public. Any expense connected therewith must first be approved and concurred in by the House of Delegates."

Section 3. New section to read as follows:

"Section 3. All resolutions and memorials of a general meeting or of a section designed to be issued in the name of the Society must be referred to the House of Delegates not later than the second day of the annual session and shall have its approval before being issued or becoming effective."

Renumber section 3 as section 4, section 4 as section 5, section 6 (now section 5), seventh line, after the word "previously" insert the words, "read before any society or," and substitute the word "this" for "the". Last sentence to read as follows:

"Section 6. No paper previously read before

any society or published may be read before this Society."

Renumber section 6 as section 7.

Chapter V. Section 1. First line, substitute the word "person" for the word "one"; third line, omit all after the word "state" and substitute "and been a member of this Society in good standing for at least two years immediately preceding"; and the section as amended shall read:

"Section 1. No person shall serve as a member of the House of Delegates who has not resided and practiced in this state and been a member of this Society in good standing for at least two years immediately preceding."

Section 3. Strike out the present section and substitute as follows:

"Section 3. Each constituent society in good standing, as hereinafter provided in these by-laws, shall be entitled to send to the House of Delegates each year one delegate for every twenty-five members in good standing at the end of the fiscal year (December 31) immediately preceding (honorary members excepted), and one for an additional fraction thereof; provided, however, that each constituent society shall be entitled to at least one delegate."

Section 4. Strike out present section 4 and substitute as follows:

"Section 4. Each constituent society shall elect an alternate for each delegate, who shall be eligible to represent his society as delegate in the event of his principal failing to attend or qualify for service."

"Section 5. New section to read as follows:

"Section 5. A delegate or alternate accepted and seated shall serve throughout that annual session without substitution, unless consented to by a vote of the House. Each delegate shall be entitled to only one vote, and shall represent the constituent society in which he pays his state society dues and no other, and no representation shall be accorded a society whose delegates and alternates are absent. No proxies shall be recognized under any circumstances."

Chapter VI. Section 5. Omit all after the word "salaries" in third line and substitute "make annual appropriations for the authorized expenditures and make all pronouncements for and in the name of the Society"; and the section as amended shall read:

"Section 5. The House of Delegates shall have general charge of all the business affairs of the Society. It shall fix salaries, make annual appropriations for the authorized expenditures and make all pronouncements for and in the name of the Society."

Section 8. Strike out present Section 8, renumber present section 9 as section 8 and substitute the words "official journal" for the word "transactions" fourth line; and the section as amended shall read:

"Section 8. The House of Delegates shall present a summary of all its proceedings to the last general meeting of each annual session and shall publish the same in the official journal."

Chapter VII. Section 1, first line, substitute the word "At" for the word "on". Sixth line, omit all after the word "nominating" and to the word "delegates" in the eighth line, and substitute "at least one member of the Society for each of the offices to be filled"; and section as amended shall read:

"Section 1. At the first meeting of each annual session the House of Delegates shall select a committee on nominations consisting of five delegates, no two of whom shall be from the same

constituent society. This committee shall prepare a ticket nominating at least one member of the Society for each of the offices to be filled, delegates to the American Medical Association, member of the publication committee and a time and place of meeting for the following year, and report the same to the House not later than the second day of each annual session. Additional nominations may be made by delegates from the floor at any time before the election."

Chapter VII. Section 3. Omit the first three sentences and substitute the following:

"Section 3. The Treasurer shall be the custodian of all moneys, securities and deeds of the Society, and shall deposit the same in a safe banking institution, subject to the direction and disposition of the House of Delegates. He shall pay all bills against the Society, and by voucher check, but he shall pay no money from the treasury except for just bills which have been approved by the President and Secretary. He shall keep an accurate account of all receipts and expenditures, and annually make a full and detailed statement of the financial affairs of the Society, and a report of all his official acts. He shall give such bond for the faithful performance of his trust as the House of Delegates may require."

Section 4. Amend section 4, and this section as amended shall read:

"Section 4. The Secretary shall perform the duties usual to such office and keep separately the minutes of the general meetings and the House of Delegates. He shall be custodian of the general papers and records of the Society, except such as belong to the Treasurer and Publication Committee, and shall keep account of and turn over to the Treasurer monthly such moneys as are paid to him. He shall keep a card index register of all persons who are, or may become, members of any constituent society, noting of each his standing from year to year, together with such other personal data as may be of interest and value for the records of the Society, and furnish to the American Medical Association such of these records as may be desired, and such other information concerning the medical profession of the State as may be requested and available. He shall provide for the registration of members and delegates at each annual meeting. He shall annually make a full report of his office to the House of Delegates, and of the proceedings of the House of Delegates to the general meeting."

Chapter IX. (See appendix).

Chapter X. Section 5. After the word "Society" in the last line add, "and have supervision over the property of the Society deposited with the Library of the Medical Society of the City and County of Denver. All moneys received by the committee shall be promptly paid to the Treasurer", and the section as amended shall read:

"Section 5. This committee, under the direction of the House of Delegates, shall have charge of and direct all the publications of the Society and have supervision over the property of the Society deposited with the Library of the Medical Society of the City and County of Denver. All moneys received by the committee shall be promptly paid to the Treasurer."

Section 8. Strike out this section and renumber section 9 as section 8.

Chapter XI. Make new chapter under the title "Journal and Library" to read:

"Section 1. The Society shall publish monthly an official journal under the title *Colorado Medicine*, the subscription price of which shall be two dollars per year. The journal shall be furnished

to all pay members of constituent societies while in good standing, and to new and reinstated members as soon as their names are reported and their subscription is received."

"Section 2. All advertisements accepted for the pages of *Colorado Medicine* shall be strictly ethical in character, and no drugs or pharmaceutical preparations shall be advertised unless they have been approved by the Council on Pharmacy and Chemistry of the American Medical Association."

"Section 3. All books and journals purchased and received in exchange or for review, all surplus numbers of *Colorado Medicine* and the archives of the journal and of the Society, shall be deposited with the Library of the Medical Society of the City and County of Denver as custodian of this Society."

Chapter XII. Renumbered Chapter XI. Number second paragraph, fourth line, as Section 2, and in second line of paragraph substitute the word "three" for the word "two." Sixth line, after "(\$2.00)" insert "of each member" and in the next line omit all after the word "medicine". Eighth line, substitute the word "third" for the word "first". Tenth line, strike out the remainder of the paragraph and substitute after the word "society" the following: "An annual report giving the full roster of membership since the last annual report, showing in detail those who have paid their annual assessment, those who are delinquent, changes of address, and all changes that have taken place in the membership by removal, resignation, suspension or dropping for cause, and by death, together with a list of honorary members, officers, delegates and alternates, and accompany the report with a check for the amount of the per capita assessment collected from members due this Society and not previously paid"; and the section as amended shall read:

"Section 2. Each constituent society shall collect during the first three months of each fiscal year an assessment of three dollars per capita on its membership and pay the same to this Society. Such assessment shall cover the annual dues (\$1.00) and the subscription (\$2.00) of each member for the official journal, *Colorado Medicine*. On or before the third day of April of each fiscal year the Secretary of each constituent society must forward to the Secretary of this Society an annual report, giving the full roster of membership since the last annual report, showing in detail those who have paid their annual assessment, those who are delinquent, changes of address, and all changes that have taken place in the membership by removal, resignation, suspension or dropping for cause, and by death, together with a list of honorary members, officers, delegates, alternates, and accompanying the report with a check for the amount of the per capita assessment collected from members due this Society and not previously paid."

Section 3. Strike out present section 2 and substitute the following:

"Section 3. A constituent society making such annual report and remittance shall be considered in good standing, and any constituent society whose annual report, with remittance, is not in the hands of the Secretary by the fifth day of April of any year shall be held as suspended and its members shall not be allowed to register or participate in any of the proceedings or business of the Society until the annual report and remittance have been received, the receipt of which shall be held as relieving such society of all its

disabilities and restoring it to good standing. It is provided, however, that members in good standing in such suspended society may personally and independently pay into the treasury of this Society an annual due of three dollars each and, if approved by the House of Delegates or its Committee on Credentials, they shall be credited as members of this Society for one year and allowed to register and enjoy all the privileges of members for that year."

"Section 4. It is further provided that if the report of any constituent society is not received by the fifth day of April of any year the Secretary shall call the attention of the officers of that Society to the fact that it is under suspension; and if the report, with remittance, as required by these by-laws, is not in the hands of the Secretary by the twentieth day of April of that year, the constituent society thus delinquent shall have no representation in the House of Delegates for that year."

Section 5. New section to read as follows:

"Section 5. Upon the receipt of the annual reports of constituent societies the Secretary shall send a notice to the last postoffice address of each member reported as delinquent in his dues, reminding him of the delinquency and the penalty and soliciting the continuance of his membership. If the delinquency of any member is not removed by report and remittance of his dues from the Secretary of the constituent society by the first day of May of that year the name of such delinquent member shall be dropped from the roll of membership of this Society and *Colorado Medicine* shall be discontinued. Such delinquents shall, however, be reinstated as members in good standing with all its privileges at once when the delinquency is relieved by the proper report and remittance if within one year of the date of suspension."

Section 6. Renumber present section 3.

Chapter XIII. Present Chapter XII, section 1, third line, substitute the word "or" for "and" and the section as amended shall read:

"Section 1. This Society shall favor the organization of a medical society in each county of this state, or district medical societies, combining the profession of two or more neighboring counties, provided the physicians of such counties are not sufficiently numerous to form successful separate medical societies."

Section 2. Omit the last sentence, commencing with "Only one constituent, etc."

Section 6. Fourth line, omit all of the sentence after the word "grievance" and add "to the Council", and insert the sentence, "Matters over which the Judicial Council of the American Medical Association have jurisdiction may be submitted to it for adjudication, but only as an appeal from the decision of the Council of this Society", and the section as amended shall read:

"Section 6. Any physician who may be refused membership, or feel aggrieved by the action of the constituent society of his district, or its members, may carry his grievance to the Council. Matters over which the Judicial Council of the American Medical Association has jurisdiction may be submitted to it for adjudication, but only as an appeal from the decision of the Council of this Society. Efforts to conciliate and compromise shall precede all hearings on appeal."

Strike out present section 7 and substitute the following:

"Section 7. Should a member in good standing in a constituent society remove to the jurisdiction of another constituent society his name shall

be transferred within three months without cost, provided the current annual dues and the assessment of this Society have been paid in the society from which he is transferred. This same courtesy shall be extended to any member of a constituent society of any other state society, provided that the current annual dues, both local and state, have been paid in the society from which he is transferred and the card of demit is presented to the constituent society within three months of its date."

"Section 4. Physicians living in a county or district having no constituent society may hold membership in a convenient constituent society, also, physicians living at an inconvenient distance from their constituent society may hold membership in a convenient constituent society, subject, however, to the approval of the society having jurisdiction over the place of his residence."

Section 8. Strike out the present section and substitute the following:

"Section 9. The secretary of each constituent society shall keep a roster of its membership, showing the full name and address of each member; the college and date of graduation in medicine; other degrees and their source; previous residences; date of license to practice in Colorado; date of election to membership in the constituent society, and such other personal data as may be of interest and value for the records of this Society, noting all changes of address, resignations, removals, deaths, delinquencies in dues and other incidents affecting the standing of members. On or before the third day of April each year he shall send to the Secretary of this Society a full report of the membership of the society, showing the standing of each member, with as much of the above data for old members as may be desired, and full information concerning all new members, and accompany the report with a check for the amount of the per capita assessment collected from members for this Society, complying with the requirements of section 2 of chapter XII of these by-laws. He shall also make report to the Secretary of this Society before the twenty-fifth day of each month of all changes in the membership of his society that may occur from time to time during the year and accompany reports of the election of new members and reinstatements with full data and a check for the amount due this Society. He should also furnish as much information as possible pertaining to the life and recent illness of deceased members."

Section 9. New section to read as follows:

"Section 9. Persons elected to membership in constituent societies during the last three months of the year, after the annual session of this Society, shall be credited as members in good standing as soon as they are reported and their dues are received and throughout the following year without further payment."

Section 10. Same as present section 9 except substitute the words "three months" for the words "one year" in the last line.

Your committee unanimously recommends the adoption of the amendments to the By-laws as herein set forth.

Your committee begs to add to this report an appendix as follows:

Appendix.

Your committee further recommends that the Council should be reconstructed and given powers similar to those of the Judicial Council of the American Medical Association; making it the

Board of Censors of the Society, giving it original jurisdiction in all matters of controversy and power to investigate conditions that affect the welfare of the profession and its relations to the public and report its recommendations to this House.

In the judgment of your committee the Council should be reduced to five members, each of whom, after the first election for one, two, three, four or five years, respectively, should serve five years.

Such reconstruction of the Council must depend upon the adoption of the amendments proposed for sections 1 and 2, article VIII of the Constitution as recommended in this report. This amendment cannot become effective until next year and the committee therefore recommends that the necessary changes in chapter IX of the present By-laws be deferred until next year, at which session the amendments to both the Constitution and the By-laws may be put into effect coincidentally and a new Council created.

If these recommendations are approved a resolution may properly be passed at this session respectfully requesting that the provisional resignations of the present councillors be placed in the hands of the Secretary, to become effective next year upon the adoption of the new By-laws. If this course is adopted the present committee should be continued another year that it may complete this work.

Respectfully submitted,

W. A. JAYNE,

Chairman.

HUBERT A. BLACK,

L. H. MCKINNIE.

At the conclusion of the report Dr. Hubert Work moved that it be received and accepted, and that a copy of the recommendations be submitted to the Secretary of each different county society as recommended and that the committee in preparing these changes to the Constitution be continued for another year.

Seconded and carried.

The report of the Committee on Workmen's Compensation Act was called for and Dr. Jayne moved that the reading of this report be deferred until the next meeting of the House of Delegates.

Seconded and carried.

Dr. Jayne moved that the report of the Committee on Prevention and Control of Cancer be referred to the Reference Committee on Reports of Committees.

Seconded and carried.

The report is as follows:

REPORT OF COMMITTEE ON PREVENTION AND CONTROL OF CANCER.

To the essential observer this is a hackneyed subject and to the casual observer a great deal of enthusiasm exists among all medical men on this very important matter. To those who follow the recent writings of men who are working extensively with the X-ray and men who have become too strongly enamored of the expensive and flirtatious maiden Radium it would seem hardly necessary to spend much time in trying to prevent a disease that is so easily cured.

The fact remains, however, that there is not known to medical science any real radical, reliable cure for cancer after it has progressed so far as to render it surgically incurable. It is therefore of the utmost importance that something be done to educate the people as to the danger signs, and toward this end I believe the

state society should outline some plans for getting the matter before the people in a way that will make them see the wisdom of prevention and not run the risk of a doubtful cure after the disease has manifested itself.

A great deal of time and effort have been wasted in trying to get the medical profession to realize the importance of prevention. Very little can be accomplished in any endeavor without a proper amount of enthusiasm, and I believe that there exists a great want of this enthusiasm among the members of the medical profession and especially among those who are teaching in our medical schools. I am led to this conclusion by cases that are constantly coming to my notice where pre-cancerous conditions have been neglected or ignored by the medical adviser until the time even for surgery to accomplish any good has gone by. Recently a woman aged forty-six came to me from a neighboring town. She had a neoplasm in the right breast about twice the size of a walnut, and the axillary glands were noticeably enlarged, and yet she had been advised by a physician registered in the State and graduated only recently from our State University to leave it alone and that it would probably never give her any trouble. One of the saddest things that ever came to my notice was from just such advice given a lady by one who considers himself a leader in the profession. What has been done in the northern part of the State I do not know and have not been able to learn.

(1) I would suggest that the Board of Medical Examiners be approached and asked to carefully interrogate each applicant as to his knowledge on this subject.

(2) That arrangements be made by which each county society in the State have at least one talk along this line during the year and that those giving these talks be chosen by the Cancer Committee.

(3) That arrangements be made for public meetings in all of our towns, these meetings to be addressed by at least two medical men, these to be chosen by the President and Secretary of the State Society.

(4) That the State Society appoint four men outside of Denver to each give a lecture before the junior and senior medical classes of the Medical Department of our State University on the subject of cancer, its prevention and cure.

Respectfully submitted,

T. A. STODDARD.

Chairman of Cancer Committee.

The Secretary read the report of the Committee on Medical Defense and moved that it be referred to a special committee to be appointed by the President tomorrow.

Seconded and carried.

The report is as follows:

REPORT OF THE COMMITTEE ON MEDICAL DEFENSE.

Your committee appointed at the last meeting of this Society to secure a referendum vote on the matter of medical defense made considerable investigation and on May first sent out a letter embodying the following statements of fact as determined by said investigation:

"Some of the facts associated with state medical defense are as follows:

"First. Twenty-two state societies have medical defense in operation. All these state that the plan is successful.

"Second. The annual cost of the defense in

these states ranges from two to six dollars per capita.

"Third. In view of the fact that the membership of the Colorado State Medical Society is only about £00, your committee feels that a conservative estimate for the first year's assessment would be about five (\$5.00) dollars per member. This probably would exceed all demands for defense alone, but the expense of organization will be great the first year. Any surplus, of course, would be retained in the fund for future use.

"Fourth. It is understood that this plan includes only medical defense to the highest court, and does not include indemnity in case of judgment.

"Fifth. In the states in which medical defense is operative all members are required to pay the assessment.

"Sixth. In the event the defense is adopted by this vote the details of the plan will be worked out by the House of Delegates."

All members who were in good standing May 1st, 1916, were mailed the above explanation, together with stamped and addressed voting form for reply. The number sent out was 799.

The result of the vote thus obtained was 273 for and 244 against the proposition. Total vote, 517.

Included in this vote were a few requests that an indemnity clause be included in the defense plan.

According to our laws, a majority of the members voting who had the opportunity constitutes a ballot, and a majority of the ballot in the affirmative carries the referendum. This seems to have been the case in this vote. Your committee therefore declare the referendum in connection with medical defense carried affirmatively and respectfully submit the matter for your further consideration.

MADISON J. KEENEY,
CRUM EPLER,

Committee.

Dr. Jayne moved that further business be postponed and that the House proceed with the selection of a nominating committee.

Seconded and carried.

The following were elected members of the nominating committee: O. F. Broman, Greeley; Charles O. Giese, Colorado Springs; Hubert Work, Pueblo; A. S. Abdun-Nur, Walsenburg; R. W. Arndt, Denver.

On motion of Dr. Jayne the House of Delegates then adjourned until 8:30 a. m. Tuesday, September 5, 1916.

Second Meeting of the House of Delegates, September 5, 1916

The House of Delegates met at 9:00 a. m. and was called to order by the President.

The Secretary called the roll and announced a quorum present.

Dr. Jayne moved that the House of Delegates now adjourn and meet directly after the Scientific Session.

Seconded by Dr. Carmody and carried.

Accordingly, the House then adjourned.

Third Meeting of the House of Delegates, September 5, 1916

The House of Delegates met at 4:20 p. m. and was called to order by the President.

The minutes of the two previous meetings were read and approved.

The Secretary read the report of the Publica-

tion Committee, which was referred to the Reference Committee on Reports of Committees.

The report is as follows:

REPORT OF COMMITTEE ON PUBLICATION.

During the past eleven months included in this report Colorado Medicine has, we believe, continued to improve under the excellent management of the Editor, Dr. William H. Crisp. We would call particular attention to the careful editing and the marked freedom from errors in the reading matter, an achievement which has been by no means easy of attainment.

We again urge upon the local societies the desirability of supplying to the journal reports of their meetings through the proper channel, "The Reporter."

During the eleven months the Journal has contained 360 pages of reading matter, of which 153 were devoted to papers and discussions from the last annual meeting of the State Society, 77 pages to other original papers and the balance, 130 pages, to editorial and miscellaneous matter, including the report of the proceedings of the House of Delegates and the reports of meetings of local societies.

Seventy-six books were reviewed and deposited with the library of the State Society in custody of the Medical Society of the City and County of Denver.

A total of 13,936 reprints were ordered by 36 authors, 26 Denver authors ordering a total of 12,300; 10 outside of Denver ordering 1,636.

The assistance afforded by the Cooperative Medical Advertising Bureau has been very substantial and has kept our pages, devoted to this purpose, filled with wholly ethical advertisements of which our members should take notice, and to which they should lend encouragement in every proper way.

The gross expenditure on the Journal for the eleven months was \$1,790.03, the net receipts for advertising and occasional subscriptions being \$687.15.

Adding the receipts from advertising, etc., to the appropriation, which at \$2 per capita is \$1,634, a balance of \$531.12 is left to our credit in the hands of the treasurer.

Respectfully submitted,

A. J. MARKLEY,
L. B. LOCKARD,
MELVILLE BLACK.

The report of the Committee on Health and Public Instruction was called for and Dr. Jayne moved that it be referred to the Reference Committee on Reports of Committees without being read.

Seconded and carried.

The report was as follows:

REPORT OF THE COMMITTEE ON HEALTH AND PUBLIC INSTRUCTION.

As stated in former reports, it was ascertained early in this committee's work that there was need of better architectural and sanitary standards, better education in the principles and practice of school hygiene and sanitation, popular education from public press and lectures on health topics. Especially was this found to be true of the rural school. The city school is steadily improving.

Some months ago we wrote to physicians of mining districts of this state, requesting that they address the school children and their parents each week if possible on health subjects. In these talks stress has been laid on the importance of personal health habits, the value of early de-

tection of health disorders, the necessity of early and frequent physical examinations, never losing an opportunity to speak on the value of good heredity and environment.

Aside from health talks, instruction in first aid is being demonstrated in the schools of these districts.

In Pueblo similar addresses have been given before popular audiences.

We have circulated copies of "Minimum Sanitary Requirements for Rural Schools" and literature on "The Unit Schoolhouse"; and each month through the Colorado Fuel and Iron Company 4,000 health bulletins, in four different languages, have been distributed where it was thought they would do most good. Since last June the following bulletins have been circulated: Disposal of Garbage, First Aid in the Kindergarten, Safety First, Drink Pure Water Freely, Santa Claus' Health Diary, First Aid, "Catching Cold" in a Wound, Negligence and Indifference.

In a number of rural districts health examinations of school children have been established and district nursing is being installed as rapidly as possible; in one rural district arrangements are being made to provide a dentist to treat oral diseases and teach oral prophylaxis.

In Pueblo and several mining districts Boy Scout Patrols and Junior Sanitation Leagues have been organized for the purpose of giving instruction in sanitation and teaching by practical application.

The following addresses have been given by the chairman of the committee:

What Shall We Do To Be Saved? The Next Generation, The Unit Schoolhouse, The Value of Good Environment, Eugenics, Civilization—Past and Present, The Backward Child, Civic and Social Improvement (three times), Heredity and Environment (three times), Hygiene and Sanitation (three times), Better Babies, Hernia in Relation to Compensation.

R. W. CORWIN,

Chairman of the Committee.

Dr. Hubert Work presented the report of the Committee on Nominations as follows:

REPORT OF THE COMMITTEE ON NOMINATIONS.

For President, A. C. Magruder, W. V. Mullin.
For First Vice-President, S. B. Childs.
For Second Vice-President, A. L. Trout.
For Third Vice President, W. W. Frank.
For Fourth Vice-President, A. J. Nossoman.
Delegate to A. M. A., H. R. McGraw, J. N. Hall.
Alternate Delegate, T. E. Carnody.
Councillors, M. R. Fox, Sam'l French.
Member Publicity Committee, A. J. Markley.
Place of meeting, Colorado Springs.
Time of meeting, September, 1917.

HUBERT WORK,
Chairman.

Dr. Jayne moved that this report be accepted.
Seconded and carried.

Dr. Jayne reported for the Committee on Medical Defense to the effect that the matter is of such importance that the committee desires to consider it and report at the next annual session of the Society, and to take the matter under advisement in the meantime. Motion made and seconded accordingly.

Dr. Crum Epler moved to amend that this committee be extended until the next annual meeting; that in addition to being given this time the committee shall formulate a plan whereby medical defense may become operative, provided

the report of the committee is adopted by the House of Delegates at that time.

The amendment was seconded, accepted and the original motion as amended was carried.

Dr. Jayne moved that the **International Trust Company** be officially named as the **depository** of the Society's funds in the hands of the Treasurer.

Seconded and carried.

Dr. H. R. McGraw, Denver, read the report of the Committee on Workmen's Compensation Act, which was referred to the Reference Committee on Reports of Committees.

The report is as follows:

REPORT OF THE COMMITTEE ON THE WORKMEN'S COMPENSATION ACTS OF COLORADO.

The law governing workmen's compensation in this State passed the Legislature in 1915 and has now been in operation about one and a half years. This department is in the hands of what is known as the Industrial Commission. We have had meetings with the Industrial Commission and also with Mr. O'Donnell, Chief of the Claim Department. These men all show a desire to work in conjunction with the profession of this State in handling the cases that come under the Workmen's Compensation Act.

The law passed by the Legislature only provides for a compensation of \$100.00 to cover all expenses incurred with reference to any one accident; this amount is supposed to remunerate the physician, the hospital, etc. The fee schedule at the present time, as compared with the fee schedules of other states, is considerably lower; this, however, is due to the fact that in other states the maximum total remuneration under the law is \$150.00 and \$200.00. The amount of compensation varies in the different states from 40 per cent to 65 per cent of the wages of the injured employee. In all fee schedules amputation is made the main operation, compared to fractures, and pays a higher rate of compensation to the medical men, when in reality, while the former produces an evident loss of a part and an evident disability which is permanent, the fracture requires greater skill, greater care and greater responsibilities in caring for it, and should in all instances receive greater compensation.

There are a great number of physicians in this State who absolutely refuse to attend to cases of this nature under the fee schedule existing at this time, while on the other hand we are informed by a very responsible party that there are physicians who are under contract with insurance companies to care for all injuries at the rate of \$5.00 per person in the City of Denver and outside of Denver they are paid \$3.50 per person injured. It seems to us that we are dealing with a problem very similar to that with which we have had to contend in the contract work of lodges, railways, etc., the physician feeling that he will be remunerated, not by the contract work, but by the work referred to him by virtue of the position he holds with reference to the contract.

When the insurance act went into effect in Great Britain there was a great struggle of physicians to obtain their economic rights in dealing with the various societies through which the practical application of the insurance laws took place. Societies were formed by the medical men for the purpose of combating any injustices which might be hurled upon them by the insurance laws. Through these societies the physicians were able to assert their rights and be compensated properly for services rendered. It therefore seems to

us that we, the State Society, should organize ourselves in such a manner that we should be able to combat the injustices of the law.

The Industrial Commission at the present time are cognizant of the fact that the fee bill is not right, and they are willing to change it to satisfy us within the limits of the law; they will also be prepared at the meeting of the next legislature to use their influence to have the maximum total compensation raised from \$100.00 to \$150.00 or \$200.00. We therefore recommend that a committee of three be appointed from this Society to work in conjunction with the Industrial Commission to revise and amend the present fee schedule and also to act as a Legislature Committee with reference to this act.

The chief of the Claim Department of the Industrial Commission is very anxious to do everything in his power to have the cooperation of the medical profession, and is using his good offices in directing this work to the benefit of the physicians so far as the law allows. The Industrial Commission, we are informed, have never attempted to direct medical attention in any given channel and the physicians appointed by this Commission to give testimony or to serve the Commission have never been asked to sign the fee schedule; they have been allowed compensation which is fair and just and physicians have been allowed in a number of instances to charge for dressings, for livery hire, etc.

Considerable contention has arisen between insurance companies and physicians with reference to fees; these disputes should all go, or be referred to the Commission for decision.

Workmen's compensation acts are very rapidly being adopted by the various states; in the last year the law was passed in ten states, so that a large majority of all the states are now operating under such a law. This is only the beginning of social insurance in the United States, following this will come sickness insurance, old age insurance, insurance for widows and orphans and maternity insurance. Thus you will see that the position of the physician is very rapidly changing. He will eventually be a public servant to render services under the laws of the various commonwealths, and as medical men we should be prepared to meet this contingency as fast as it arises. We should be organized in such a way that we could exert our influence in the Legislature of the State, to maintain our rights, and to warrant justice in the passage of these laws.

H. R. MCGRAW,
Chairman.
S. D. VAN METER.

Dr. Crum Epler moved that the consideration of the proposed changes in the by-laws be made a special order of business tomorrow (Wednesday) morning, immediately after the reading of the minutes.

Seconded and carried.

On motion, which was duly seconded and carried, the House of Delegates adjourned to meet promptly at 8:00 a. m. Wednesday, September 6, 1916.

Fourth Meeting of the House of Delegates, September 6, 1916

The House of Delegates met at 8:00 a. m., and was called to order by the President.

The minutes of the previous meeting were read and approved.

Dr. W. A. Jayne brought up the matter of amendments to the by-laws.

Dr. Epler moved that these amendments be taken up seriatim.

Seconded and carried.

The amendments were then read section by section, and on several motions, which were duly seconded, adopted.

On motion of Dr. Jayne, which was duly seconded, the amendments were adopted as a whole.

Dr. Epler moved that, after the Constitution and By-Laws have been printed in *Colorado Medicine* as a part of the minutes of this meeting, four hundred reprints be furnished to the Secretary for distribution.

Seconded and carried.

Dr. W. A. Jayne read the report of the Committee on Appropriations, as follows:

REPORT OF COMMITTEE ON APPROPRIATIONS.

Estimate of Necessary Appropriations for 1917.	
Colorado Medicine, \$2 per capita, and advertising	\$1,660.00
Editor's Salary, \$25 per month	325.00
Secretary, stenographer, \$10 per month.	130.00
Committee on Public Policy and Legislation	150.00
Incidentals	200.00
Stenographer State Meeting	225.00
Library	210.00
Programs	65.00
Stereopticon	85.00
Secretary	200.00

W. A. JAYNE,
E. D. BURKHARD,
R. W. ARNDT.

Dr. Thomas E. Carmody, Denver, presented the report of the Reference Committee on Reports of Committees, as follows:

REPORT OF THE REFERENCE COMMITTEE ON REPORTS OF COMMITTEES.

Report of Committee on Prevention of Cancer. Your committee respectively recommends that the suggestion made in this report that each county society have at least one meeting each year devoted to cancer and the cancer problem be adopted.

Report of Committee on Publication. We wish to congratulate the Committee and the editor in particular, on the excellent showing of *Colorado Medicine* as to appearance, arrangement of material and content.

Report of Committee to Cooperate With State Pharmacal Association. We find the chairman of this Committee has endeavored in every way to cooperate with the State Pharmacal Association, but they have both been hampered by the state authorities so that the net result has been unsatisfactory.

Committee on Health and Public Instruction. We wish to congratulate this Committee on its excellent report, and on the large number of public lectures (19) given by the Chairman and other members, and we would suggest that under the direction of this Committee further lectures be given during the coming year.

Committee on Workmen's Compensation Acts. We find this committee was unable to deal in detail with many features of this act, but has touched most of the essentials, and we believe that the best interests of the members of the Society will be furthered if all in attendance at this session are given an opportunity to hear this report, and we therefore respectfully recommend that it be read before the general meeting, and we further recommend the appointment of a com-

mittee of three to act with the State Industrial Commission and as a Legislature Committee.

CHAS. O. GIESE,
HARRY A. SMITH,
T. E. CARMODY.

On motion of Dr. Epler, which was duly seconded, the report was adopted.

It was moved that the report be adopted as read.

Seconded and carried.

On motion of Dr. Shere, the House of Delegates then adjourned until 8:00 a. m. on Thursday, September 7, 1916.

Fifth Meeting of the House of Delegates, September 7, 1916

The House of Delegates met at 8:00 a. m., and was called to order by the President.

The Secretary called the roll and announced a quorum present.

The minutes of the previous meeting were read and approved.

Dr. Philip Hillkowitz, Denver, presented the report of the Committee on Reports of Officers, as follows:

REPORT OF COMMITTEE ON REPORTS OF OFFICERS.

The Committee on Reports of Officers desires to congratulate the President on his masterly address, which will form a valuable addition to the collection of scientific essays in the archives of our Society.

The committee likewise takes the opportunity to commend the painstaking work of our Secretary in carrying out the onerous duties of his office. In the criticisms that are occasionally hurled at the incumbent we are apt to forget the numerous sacrifices that he has to make for our common good.

The committee has given careful consideration to the recommendations made by our Secretary and will now take them up seriatim:

1. We approve the proposal of keeping files of the minutes and transactions and of having them bound at five year intervals.

2. We also approve the recommendation of printing an alphabetical list of the names of the members in *Colorado Medicine* in the number giving an account of the proceedings of the meeting.

3. After a number of interviews with delegates and members from various sections of the State the committee concludes that it would be unwise to appropriate any more funds for organization work. Experience in past years has proven the futility of such endeavors, as no increase of membership has resulted from this form of propaganda. All such work should be initiated by the local county societies and be promoted by the individual members.

4. The revision of the by-law in regard to non-resident members of county societies has already been efficiently carried out by the proper committee.

5. The committee cordially approves the recommendation to purchase a portable stereopticon for the use of the Society at its sessions. The money expended annually for the rental of this indispensable adjunct to our scientific program will pay in two or three years for a good machine of our own.

Respectfully submitted,

PHILIP HILLKOWITZ,
Chairman.
FRITZ LARSEN,
J. E. CHIPMAN.

Dr. J. S. McConuell moved that the report be accepted.

Seconded and carried.

The election of officers being the next order of business, the President announced that the nominees for President were A. C. Magruder and W. V. Mullin, of Colorado Springs.

Dr. R. W. Arndt stated that he was authorized by Dr. Mullin to withdraw his name as a nominee for President.

Dr. H. A. Smith moved that the rules be suspended and that the Secretary cast the vote of the Society for Dr. Magruder as President.

Seconded and carried unanimously.

The Secretary cast the ballot as instructed, and Dr. Magruder was declared duly elected President.

Dr. S. B. Childs, Denver, being the nominee for First Vice-President, Dr. Thomas E. Carmody moved that the rules be suspended and the Secretary be instructed to cast the ballot of the Society for Dr. Childs as First Vice-President.

Seconded and carried.

The Secretary cast the ballot as instructed and Dr. Childs was declared duly elected.

Dr. William M. Spitzer, Denver, moved that inasmuch as there was no opposition to the second, third and fourth Vice-Presidents, they be elected all together.

Seconded and carried.

Dr. O. M. Shere, Denver, moved that the rules be suspended and that the Secretary be instructed to cast the ballot of the Society for the following three nominees for second, third and fourth Vice-Presidents: A. L. Trout, Walsenburg; W. W. Frank, Glenwood Springs, and A. J. Nossoman, Pagosa Springs.

Seconded and carried.

The Secretary then cast the ballot for the three nominees mentioned as instructed, and they were declared duly elected Vice-Presidents of the Society.

The nominees for delegates to the American Medical Association were Drs. H. R. McGraw, J. N. Hall and Oliver Lyons.

The President appointed as tellers Dr. Sedwick and Dr. Carmody.

There were nineteen votes cast, of which Dr. Lyons received eleven, Dr. Hall two, and Dr. McGraw six.

Dr. Lyons was declared duly elected delegate to the American Medical Association for the ensuing year.

As alternate delegate to the American Medical Association, Dr. Carmody withdrew in favor of Dr. C. W. Plumb, of Grand Junction.

It was moved that Dr. Plumb be elected alternate delegate.

Seconded and carried.

Dr. Carmody moved that the rules be suspended and the Secretary instructed to cast the ballot of the House of Delegates for the election of Dr. M. R. Fox, Sterling, and Dr. Samuel French, Meeker, as Councillors.

Second and carried.

The Secretary cast the ballot as instructed and Drs. Fox and French were declared duly elected.

The nominees for member of the Publication Committee were Drs. A. J. Markley and Philip Hillkowitz.

There were seventeen votes cast, of which Dr. Hillkowitz received ten, and Dr. Markley seven.

Dr. Hillkowitz was declared duly elected a member of the Publication Committee.

Colorado Springs having been nominated for the place of next meeting, and the time of meeting September, Dr. A. S. Abdun-Nur moved that

the rules be suspended and that the Secretary be instructed to pass the ballot of the House for Colorado Springs as the place of next meeting and the time of meeting to be September.

Seconded and carried.

The Secretary cast the ballot as instructed and Colorado Springs was declared to be the next place of meeting, and the time September, 1917.

Dr. Carmody presented a supplementary report from the Reference Committee on Committees, and moved its adoption, which motion was duly seconded.

The report is as follows:

SUPPLEMENTARY REPORT OF REFERENCE COMMITTEE ON REPORTS OF COMMITTEES.

Your committee also recommend that the number of papers be limited to 30 at any one Colorado State Medical Society session; and that authors not present to read their papers shall not be given a place on the program for the next two years.

CHAS. O. GIESE,
H. A. SMITH,
T. E. CARMODY.

Dr. Epler moved as an amendment to the report that authors not present to read their papers shall not be given places on the program for the next two years unless otherwise directed by the Program Committee.

The amendment was seconded, accepted, and the original motion as amended was carried.

The Secretary read the report of the Reference Committee on Miscellaneous Business as follows:

REPORT OF THE REFERENCE COMMITTEE ON MISCELLANEOUS BUSINESS.

We, the Committee upon Miscellaneous Business, beg to report upon the Hay bill in the United States House of Representatives, as follows:

We believe in the proper organization of the medical profession as a part of the general preparedness plan for national defense, and therefore we submit the following resolution for approval:

Resolved, That it is the sense of the Colorado State Medical Society that provision should be made for enrolment of a large number of physicians in the Officers' Reserve Corps.

Resolved Further, That a copy of this resolution be mailed to each senator and representative of Colorado in the National Congress.

Relative to the letter from the American Association of Labor Legislation, we recommend that, as this is a very important movement, and requires careful consideration, a special committee be appointed to study the subject.

H. S. HENDERSON,
C. A. RINGLE,
A. S. ABDUN-NUR.

Dr. Carmody moved that the report be adopted. Seconded and carried.

Dr. Edward Burkhard made the following report for the Auditing Committee, and moved its adoption:

REPORT OF THE AUDITING COMMITTEE.

The Auditing Committee has examined and checked the books and vouchers of the Secretary and the Treasurer and finds they are kept well and accurately and that the reports rendered by those officers are correct and true.

E. D. BURKHARD,
R. W. ARNDT.

Seconded and carried.

The Secretary stated that it was the custom of the Society to pay the traveling expenses of

invited guests. He therefore moved that the action of the officers of the Society in paying the expenses of Dr. Binnie and Dr. Pfahler be ratified to the extent of paying Dr. Binnie \$53.00 and Dr. Pfahler \$125.00.

Seconded and carried.

The Secretary called attention to the fact that the Committee on Reports of Officers recommended that the Society buy a stereopticon, and accordingly moved that such part of \$85.00 as may be necessary to purchase such an instrument after investigation be set aside for that purpose.

Seconded and carried.

On motion which was duly seconded, the House of Delegates then adjourned to meet at Colorado Springs at 8:00 p. m. of the day before the day of the regular session, at such time as may be set for that session.

**MINUTES OF THE FORTY-SIXTH ANNUAL
SESSION OF THE COLORADO STATE
MEDICAL SOCIETY, HELD AT GLEN-
WOOD SPRINGS, SEPTEMBER 5,
6, AND 7, 1916.**

September 5, First Day, Morning Session.

The Society met at 9:50 a. m., and was called to order by the President, Dr. John R. Espey, of Trinidad. Mr. Olie Thorson, Mayor of Glenwood Springs, was introduced and delivered an address of welcome.

The address of Mayor Thorson was responded to by President Espey.

Dr. W. W. Crook, chairman of the Local Committee of Arrangements, stated that at 3 p. m. Tuesday, there would be a swimming contest under the direction of Swimming Master Waller; that at 5 p. m. the same day a first-aid demonstration would be given by the Colorado Midland team on the lawn in front of the stone bath-house; that on Wednesday, at 4:30 p. m., the ladies would be given an automobile ride, ending at the Country Club for tea, and races at the polo grounds; that at 8 p. m., on Wednesday, the President's reception and ball would be held; that at 4 p. m. on Thursday, a party and tea would be given for the ladies at the Hotel Colorado; and swimming in the pool and tennis matches for the men; and that at 10 p. m. on Thursday there would be dancing and a smoker.

Dr. L. G. Weldon, Denver, read a paper entitled "Dysmenorrhea," which was discussed by Dr. Mead, and in closing by the author of the paper.

Dr. C. E. Tennant, Denver, read a paper on "New Growths and Infections Associated With and Following Chronic Suppurative Appendicitis, with a Report of Three Cases".

This paper was discussed by Dr. Emil Ries, Chicago, by invitation, and discussion closed by the essayist.

Dr. F. N. Cochems, Salida, read a paper entitled "Some of the Frequent Complications Following Acute Appendicitis", which was discussed by Drs. J. N. Hall and C. E. Tennant.

Dr. H. A. Black, Pueblo, read a paper entitled "Chronic Appendicitis and Its Gastric Relations", which was discussed by Dr. Crum Epler.

Dr. Cyrus L. Pershing, Denver, read a paper on "The Nature and Treatment of Sciatica", which was discussed by Dr. George B. Packard.

Dr. Alexander C. Magruder, Colorado Springs, read a paper entitled "The Faucial Tonsil and Its Relation to Systemic Conditions", which was discussed by Drs. Thomas E. Carmody, H. A. Smith, Gerald B. Webb, J. W. Ames, and the discussion closed by the author of the paper.

Dr. M. R. Fox, Sterling, read a paper on "Intravenous Medication".

Dr. Edward W. Skinner, Kansas City, Missouri, read by invitation a paper on "Roentgen Joint Interpretation", which was illustrated by numerous stereopticon slides.

The paper was discussed by Drs. H. P. Brandenburg, G. E. Pfahler (Philadelphia), S. B. Childs, and Crum Epler.

On motion of Dr. Jayne, the reading of the other papers on the morning program was postponed until the next day.

On motion, the Society adjourned until 8 p. m.

First Day—Evening Session.

The Society reassembled at 8 p. m., and was called to order by Vice President Dr. C. E. Tennant.

The President, Dr. John R. Espey, Trinidad, delivered an address on "Abdominal Pain".

Dr. Livingston Farrand, Boulder, President of the University of Colorado, followed with an address entitled "Medical Education and Public Health"*, after which the Society, on motion, adjourned until 9 a. m. on September 6th.

September 6, Second Day—Morning Session.

The Society met at 9 a. m., and was called to order by the President.

Dr. William M. Spitzer, Denver, read a paper entitled "Infection of the Seminal Vesicles", which was discussed by Drs. Oliver Lyons, J. F. McConnell, and the discussion closed by the essayist.

Dr. A. J. Hosmer, Salt Lake City, Utah, Fraternal Delegate from Utah, read a paper entitled "Postural Prophylaxis in Relation to Deformity", which was discussed by Dr. George B. Packard.

Dr. Charles O. Giese, Colorado Springs, followed with a paper entitled "Spontaneous Pneumothorax in the Tuberculous", which was discussed by Drs. J. N. Hall, O. M. Shere, O. M. Gilbert, J. E. McConnell, Will Howard Swan, and discussion closed by the author of the paper.

Dr. J. N. Hall, Denver, read a paper entitled "The Diagnosis of Menstrual Reflux Through the Tubes", which was discussed by Dr. W. A. Jayne and in closing by the essayist.

Dr. Louis H. McKinnie, Colorado Springs, read a paper on "Cesarean Section, an Operation of Choice".

This paper was discussed by Drs. H. R. Bull, Thomas A. Davlin, H. R. McGraw, Will Howard Swan, and the discussion closed by the essayist.

Dr. H. R. McGraw, Denver, presented the Report of the Committee on Workmen's Compensation Act.

Dr. Philip Hillkowitz, Denver, read a paper on "Tumors of the Breast", which was discussed by Drs. Leo W. Bortree, O. M. Shere, and the discussion closed by the essayist.

On motion, the Society adjourned until 2:30 p. m.

Second Day—Afternoon Session.

The Society reassembled at 2:30 p. m., and was called to order by the President.

Dr. G. E. Pfahler, Philadelphia, by invitation delivered an address entitled "The Treatment of Malignant Diseases by Means of Deep Roentgen Therapy and Electro-Coagulation".

Dr. John F. Binnie, Kansas City, Missouri, by invitation delivered an address on "Congenital Stenosis of the Pylorus".

Dr. Edward H. Skinner, Kansas City, Missouri, showed several slides illustrating the cases of Dr. Binnie.

On motion, the Society adjourned until 9 a. m. on September 7th.

*To be published in the November issue.

September 7th, Third Day—Morning Session.

The Society met at 9 a. m., and was called to order by the President.

The Secretary presented a verbal summary of the proceedings of the House of Delegates.

Dr. George H. Curfman, Salida, read a paper on "Botulism", which was discussed by Dr. Hillkowitz and in closing by the essayist.

Dr. Oscar M. Shere, Denver, read a paper entitled "Surgical Tuberculosis of the Peritoneal Cavity".

This paper was discussed by Drs. H. R. McGraw, Leonard Freeman, F. N. Cochems, C. E. Tennant, and discussion closed by the essayist.

Dr. C. A. Ringle read the report of the Committee on Necrology.

Dr. Epler moved that the report be adopted and made a part of the minutes of the Society.

Seconded and carried. (See below.)

Dr. W. T. H. Baker, Pueblo, read a paper entitled "Rupture of Abdominal Viscera Produced by Non-Perforating Traumatism", which was discussed by Drs. H. R. Bull, Hart Goodloe, Charles A. Davlin, William M. Spitzer, F. N. Cochems, and the discussion closed by the essayist.

The Secretary presented the following resolution and moved its adoption:

Resolved, That we extend to the management of Hotel Colorado at Glenwood Springs our deep appreciation for their open heart-felt hospitality and cordial treatment of our members, as well as for the generous use of hydrotherapeutic facilities, etc., during this session.

Seconded and unanimously carried.

Dr. S. B. Childs, Denver, read a paper entitled "The Status of Roentgen Therapy at the Present Time".

This paper was discussed by Drs. Crum Epler, Casper Frank Hegner, and the discussion closed by the essayist.

The following papers were read by title and ordered published in the proceedings: "Effect of Intestinal Stasis on the Eye, Especially Iritis", by Dr. Henry M. Thompson, Pueblo; "Cystoscopy in the Insane", by Philip Work, Pueblo; "Dyspituitarism; a Report of Cases of Disorder of the Pituitary Gland, Occurring in the Pre-Adolescent Period", by Dr. George A. Moleen, Denver.

Dr. C. D. Spivak, Denver, read a paper entitled "Fasting".

The paper was discussed by Dr. O. M. Gilbert, and in closing by the essayist.

The installation of officers being the next order, the President appointed Drs. Holmes and Chipman to escort the President-elect to the platform.

President Espey then introduced his successor, and Dr. Magruder made a few remarks in accepting the presidency.

On motion of the Secretary, the Society adjourned to meet in Colorado Springs in 1917.

The report of the Committee on Necrology was as follows:

REPORT OF COMMITTEE ON NECROLOGY.

During the past year death has taken the following physicians from our ranks:

Dr. Mary Ambrook, Boulder, age 70 years; University of Michigan, 1891.

Dr. Thomas D. Baird, Walsenburg, age 63 years; Rush Medical College, 1877.

Dr. W. L. Dorland, Pueblo, age 67 years; Western Reserve School of Medicine, Cleveland, Ohio, 1874.

Dr. Alexander Perry, Denver.

Dr. Geo. L. Hoel, Ft. Collins, age 54 years; Barnes Medical College, 1898.

Dr. S. N. Smith, San Luis, age 50 years; University of Louisville, 1894.

Dr. J. C. Blickensderfer, Denver, age 69 years; Washington University Medical School, 1877.

Dr. P. V. Carlin, Denver, age 62 years; University of Denver, 1882.

Dr. Jas. F. Kearns, La Junta, age 53 years; McGill University, Canada.

Dr. Carl Walbrach, Denver, age 42 years; University of Munich, Germany, 1896.

Dr. Perry Jaffa, Trinidad, age 46 years; Denver & Gross Medical School, 1901.

Dr. J. W. Rambo, Florence, age 62 years; College Physicians and Surgeons, Keokuk, Ia., 1881.

Dr. E. C. Rivers, Denver, age 58 years; University of Maryland School of Medicine, 1879.

Dr. James Stenhouse, Denver, age 57 years; Gross Medical College, 1886.

Dr. F. G. Byles, Denver, age 63 years; Jefferson Medical College, 1883.

Dr. Asa Harvey, Cañon City, age 66 years; University of Colorado, 1894.

Many of these physicians have been prominently active in their respective local and state medical associations. Others have directed their energies to the arduous duties of a large practice. All stand high as physicians and members of the community in which they lived. All have contributed their full share to the advancement and dignity of medicine. All have attained a full measure of success in the sphere of their activities. The medical profession profoundly regrets the extraordinary losses from its ranks. We remember these physicians only as representing the highest type of professional attainment and career, as well as of manhood and womanhood.

CHARLES A. RINGLE,
HART GOODLOE,
J. B. DAVIS,

News Notes

(Continued from Page 305.)

rado & Southern Railroad, in addition to that of the western division of the Missouri Pacific.

The office of police surgeon and that of city physician in Denver are being consolidated, with an alleged economy to the city of about three thousand dollars yearly.

Dr. Luther Ingersoll, a homeopathic physician who has lived in Denver since 1879, died in that city on September 19th, aged 78 years.

After a thirteen years' fight against tuberculosis, with which he broke down at his home in Covington, Kentucky, Dr. J. W. McNamara died on September 19th at his home in Denver. He had been critically ill for over a week before his death. He was a graduate of the Ohio Medical School, class of 1901.

Dr. Carrol Fox, of the United States Public Health Service, has come to Denver to make a survey of the state public health administration. Dr. Fox was detailed to perform this work at the request of the governor, the survey committee of state affairs, and the State Board of Health. He had made similar surveys of state health administrations in Nebraska, Washington, Florida, Nevada, North Dakota, and Toledo, Ohio.

Dr. Crum Epler spent the first week in October in Albuquerque attending the New Mexico State Meeting, at which he read a paper entitled "Roentgenology, a Method of Differential Diagnosis of Gastric Symptoms."

Dr. J. A. Matlack has permanently given up practice at Longmont. After leaving the Mayo

Clinic at Rochester, Minn., he expects to locate in his old town, Galesburg, Illinois.

Dr. and Mrs. C. L. Shaffer of Salida have been away on a three weeks' trip east, during which Dr. Shaffer attended various clinics.

A man who styles himself B. F. Little has recently been collecting money from physicians in Oregon and Washington under the pretense of being a representative of D. Appleton & Company, the medical book publishers of New York. D. Appleton & Company are endeavoring to make known the fact that this man is an imposter and has no connection whatever with their firm, and that any payments which are made to him are of course at the risk of the doctor.

Medical Societies

BOULDER COUNTY.

The Boulder County Medical Society met at the Alps Hotel, Thursday evening, October 5, 1916. The regular monthly business meeting was dispensed with on motion.

Dr. Carrol E. Edson of Denver was guest of the Society, and gave a very interesting and instructive talk on "A Medical Pilgrimage to Chelsea". Preceding the program, dinner was served to the doctors and their families, the total number being about fifty.

Dr. Edson's talk was thoroughly enjoyed, after which considerable time was spent in a social way.

C. L. LaRUE,
Secretary.

CITY AND COUNTY OF DENVER.

The Medical Society of the City and County of Denver held its first regular meeting of the season on September 19, 1916. President Dr. Sewall was in the chair.

The attendance was good, and if it is an indication of the interest the members will take during the season the meetings will be very popular.

The meeting was a business meeting. On account of the press of business the scientific programme was deferred. The Society went into executive session.

A report from the Board of Censors was read by Dr. Hickey. The report was the summary of a most painstaking, thorough, and unprejudiced investigation of the publicity given by the local newspapers to a recent remedy for the treatment of tuberculosis.

The Board of Censors performed their unpleasant duty in a most fearless and commendable fashion. The Society should have just as fearlessly supported them. This they did not do. Members of the Society whose names appeared in connection with the exploitation of the original remedy were, after due investigation, exonerated.

The connection of Dr. W. C. H. Berlin and Dr. Edward C. Hill with more recent articles relating to a substitute in which they are interested justified the presentation of the matter to the Society for consideration. It was made perfectly clear that the offense was in direct violation of the code of ethics governing the Society and the American Medical Association. The clause relating thereto was by request read to the Society.

Dr. Hill was absent (though his presence was requested by the Board of Censors). He made no defense for his connection with the publicity. He sent a letter of resignation, which was read. His resignation was laid on the table.

Dr. Berlin was present, and his remarks could in no way be construed as a defense. He impugned the honesty, and questioned the motive and the sincerity of the members of the board.

The action of the board was approved, but notwithstanding this approval Dr. Berlin was exonerated of any wilful intent to violate the code of ethics.

The resignations of Dr. J. M. Steiner, who has recently gone to New York City, and of Drs. M. E. Preston and M. R. Bren, who have gone to the Philippines, were read and accepted.

An invitation to send delegates to the Anti-Tuberculosis Congress, which will be held in Albuquerque, was read. Drs. Hickey and Taussig were appointed to represent the Denver Society at this conference.

Dr. Jackson reported a rare case of localized endarteritis of one of the main branches of the retinal artery with blindness in the lower half of the field of vision.

C. F. HEGNER,
Reporter.

The regular meeting of the Medical Society of the City and County of Denver was held on October 3, 1916. President Dr. Sewall in the chair.

The attendance was fair.

Drs. T. J. West and E. F. Robinson were elected to membership.

Dr. Lida B. Russell was not favorably considered.

The scientific program, consisting of "Lightning: Some of Its Effects, and Report of Two Cases," by C. F. Hegner; and "Status of Medical Care in Modern Industries," by J. M. Shapiro, was interesting, and the papers were quite generally discussed.

The President urged the members of the Society to report more cases and to present more specimens.

C. F. HEGNER, Reporter.

FREMONT COUNTY.

The Fremont County Medical Society met in regular monthly session at the Wilson parlors in Cañon City on September 25, 1916. The meeting proved to be one of great interest. Papers were read by Dr. R. C. Adkinson, of Florence, on "Drugs of the Digitalis Group"; by Dr. L. E. Rupert, of Florence, on "Other Cardiac Tonics", and by Dr. Holmes, of Cañon City, on "The Vaso-Dilators". A luncheon was served at Nelson's Café following the meeting. Those present were Drs. Orendorff, Holmes, Webb, Little, Wade, Graves, of Cañon City; Hamilton, of Howard; Davis, of Portland; Rupert and Adkinson, of Florence.

R. C. ADKINSON,
Secretary.

NORTHEAST COLORADO.

The Northeast Colorado Medical Society met in City hall, Sterling, October 4th, 1916, Dr. J. K. Dawson presiding.

Dr. M. R. Fox was down for a paper on Intravenous Medication but professional duties kept him away.

Dr. J. C. Chipman gave an interesting report of the doings at the State Medical Society meeting at Glenwood Springs.

Dr. N. Eugenia Barney reported some very unusual and interesting cases.

The medical bill which is up before the people at the next election was discussed, and the doctors were cautioned not to forget it when they cast their ballots next November.

MYRON L. BABCOCK, Reporter.

WELD COUNTY.

On Thursday evening, September 14th, the **Weld County Medical Society** met in the City hall for its first meeting this fall. Those present were Drs. Lehan, Averill, Pogue, Hughes, Dyde, Spaulding, Broman, Knowles and Mead.

Dr. Broman gave a brief report of the Glenwood Springs meeting, and a few unimportant items of business were presented and disposed of, after which the program of the evening was taken up. Dr. Hughes reported a case of malignant prostate disease, Dr. Lehan a case of exophthalmos which cleared up under specific treatment, Dr. Averill a case of hemorrhage from the bladder due to enlarged prostate.

The paper of the evening was given by Dr. Spaulding, the subject being diabetes. The Doctor discussed the etiology very much at length, paying especial attention to the influence of the endocrine system in this disease. The paper produced a lively discussion.

On September 21st the **Weld County Medical Society** again met in regular session. This time we chose to go abroad, so wended our way over the hill to Evans to Dr. Averill's office, where the Doctor, in anticipation, had stocked up with cigars and bonbons for the more particular. Drs. Lehan, Averill, Spaulding, Broman, Knowles, Duboff, Call, Ringle and Mead were present.

Dr. Duboff gave a report of the school inspection as it had been carried on in Greeley during the previous year, presenting a general review of the defects found in the schools and the best methods of handling the various problems that arise in the medical inspection of the pupils.

Dr. Knowles gave an extended report of a case of fractured skull resulting from being thrown from a falling horse during the races here in Greeley during August. This report also included the report of the neurologist who examined the case.

Dr. Averill gave a paper on the subject of pain, particularly gastric and pyloric syndromes, including a description of several cases used as illustrations.

All three papers were warmly discussed

-E. A. MEAD, Reporter.

Book Reviews

Cerebellar Abscess, Its Etiology, Pathology, Diagnosis and Treatment, Including Anatomy and Physiology of the Cerebellum. By Isidore Friesner, M.D., Adjunct Professor of Otology and Assistant Aural Surgeon, Manhattan Eye, Ear and Throat Hospital and Post Graduate Medical School, New York; and Alfred Braun, M.D., F.A.C.S.; Assistant Aural Surgeon, Manhattan Eye, Ear and Throat Hospital; Adjunct Professor of Laryngology, New York Polyclinic; Adjunct Pathologist, Mt. Sinai Hospital. Paul B. Hoeber, New York, Publisher. Price, \$2.50.

This work is especially interesting at this time, coming as it does after the exhaustive studies that have been carried on both in this country and in Europe on labyrinthine disease and physiology, considering the intimate relationship between the cerebellum and the static labyrinth. The study of neither is complete without the other and of particular value is an understanding of the labyrinth when considering cerebellar disease from the standpoint of etiology and diagnosis.

With these important relationships in mind, it has been the aim of the authors to introduce their subject with a brief but adequate presentation of the anatomy and physiology of the cerebellum, to which they have devoted the first two chapters of their work. Of the chapter on anatomy it is unnecessary to speak, except to remark the excellent illustrations with which an always difficult subject is here simplified, but not made simple. The chapter on physiology is an admirable bringing together of the best of recent theories and hypotheses concerning cerebellar physiology, and particularly well does it put before us the relationship between the cerebellum and the static labyrinth. It is not, however, nor does it claim to be the last word on this much studied subject, and one cannot but realize, in going over the various theories that have been advanced, how very far we are from anything like scientific knowledge in this particular branch of physiology.

In writing the chapter on etiology and pathology the authors have made use of 86 cases which they have collected from the literature since 1906, and they have thus been enabled to draw many valuable conclusions, particularly as applied to etiology, and have succeeded in verifying many former opinions as to the mechanism of the formation of cerebellar abscess. We find that from 80 to 85 per cent of cerebellar abscesses complicate chronic otitis, a comparatively small proportion only being secondary to acute ear infections, but of all cerebellar abscesses 98 per cent are otitic in origin, so that the importance of this subject from the standpoint of the aurist cannot be overestimated. And the importance of labyrinth in relation to cerebellum is well illustrated by the fact that almost 50 per cent of those cases complicating chronic otitides reach the cerebellum via the labyrinth.

Symptomatology is treated more or less didactically, with a careful exposition of the reasons and causes following each symptom, thus making the complex as clear and intelligible as could be desired and enabling the reader to clear up doubts and misunderstandings as he goes along. Particular stress is laid upon the pointing tests, and six photographic illustrations aid materially in clarifying the text of this portion of the work. It is quoted that in 10 per cent of cases of cerebellar abscess death occurred before any symptoms of intracranial involvement appeared, and that in 14 per cent the symptoms were obscured by other otitic complications, while in 42 per cent the diagnosis was rendered very difficult on account of the presence of other intracranial complications; which leads us to the conclusion that this subject is one which will well bear all the study we are able to give it, and particularly calls our attention to the source of such a large percentage of these serious complications—suppurative otitis media.

As to the treatment of this most serious condition, all are agreed that it can be only surgical. Statistics vary as to the success of surgical intervention, but cures have averaged seldom less than 50 per cent of those operated on. Some have reported a much higher percentage of successes but even a low average is better than an almost certain 100 per cent mortality. One cannot fail to be impressed, however, with the manifest advantage of proper attention to the prophylactic treatment, the treatment of the causes of cerebellar abscess—labyrinthitis, sinus thrombosis and epidural abscess.

It is only necessary to add that this little vol-

ume is indeed timely, interesting and instructive and will prove of great value to both neurologist and otologist in the handling of a very difficult subject.

H. L. B.

The Treatment of Diabetes Mellitus, With Observations Upon the Disease Based Upon One Thousand Cases. By Elliott P. Joslin, M.D., Assistant Professor of Medicine, Harvard Medical School; Consulting Physician, Boston City Hospital; Collaborator to the Nutrition Laboratory of the Carnegie Institution of Washington, in Boston. Octavo, 440 pages, illustrated. Cloth, \$4.50, net. Lea & Febiger, Publishers, Philadelphia and New York, 1916.

Dr. Joslin has devoted many years to the study of diabetes; and he now gives us a book in which he has put the results of his work in form which will be of great value to the medical profession and of infinite worth to the great group of sufferers from diabetes. Heretofore the books on diabetes have necessarily been rather disheartening on account of the fact that treatment was so unsatisfactory, but at present to write a book is, as Dr. Joslin himself puts it, "a pleasure and an inspiration, because the improvement in treatment is beyond question." The first part of the book is devoted to the statistical and etiological factors in the disease. Always important, and interestingly presented, this part is not too cumbersome. Then follows a detailed description of laboratory methods, complete in every feature, valuable in the extreme, but not a necessary part of the busy practitioner's treatment of these cases. Hyperglycemia, metabolism, acidosis, urinalysis, blood examinations and many other factors are fully considered.

Treatment is of course the main topic. It is based largely upon the monumental work of Dr. F. M. Allen, but is complete in every detail—a feature unfortunately lacking in previous literature. The various complications are considered along with the general treatment of this disease. Brevity is inconsistent with thoroughness, and Dr. Joslin has devoted half the book to treatment alone, describing in detail every phase of his difficult subject, anticipating every question and every possible deviation from the usual course. Diet lists, tables, and menus are of great help. His style is pleasing and his control of the subject masterly. The volume is valuable not only to the metabolist, but also to the laboratory worker, and above all to the one who takes care of diabetes.

T. R. L.

Diseases of Children. By Edwin E. Graham, M.D., Professor of Diseases of Children, Jefferson Medical College, Philadelphia; Pediatricist to the Jefferson Hospital and to the Philadelphia Hospital; etc. Octavo, 902 pages, with 89 engravings and 4 plates. Cloth, \$6.00, net. Lea & Febiger, Philadelphia and New York.

The progress of a specialty is best attested by the wealth of its literature. A casual review of recent contributions on pediatrics will convince one of the healthful growth of this lusty offspring of internal medicine. Among the text books on diseases of children now available, none strikes us as better balanced than that of Dr. Graham, who has combined the experience of the clinician and the wide knowledge of the teacher. Features of this attractive work are: chapters on normal digestion, on infant mortality, heredity and puberty.

The importance of a thorough knowledge of the process of dentition, which the author rightly considers as a physiological phenomenon, is ably con-

sidered, and must be regarded as a comprehensive endorsement of the French axiom, "Teething produces nothing but teeth."

The protean manifestations of rheumatism are discussed in a special chapter. Differentiation between pylorospasm and pyloric stenosis is made clear. A few more illustrations would add to the value of the book, but those presented are excellent and well selected.

J. W. A.

Home Care of Consumptives, by Roy L. French, former Secretary Kentucky Tuberculosis Commission, 27 illustrations. G. P. Putman's Sons, New York; London.

This comprehensive work on the home care of a consumptive will be of great benefit to nurses and patients.

In the hands of patients, this book will bring about efficient cooperation between them and their medical director.

Many chapters in the book should be repeatedly read by patients in order that the specific details may become a part of their daily life.

The chapter on foods and their preparation is well written and will prove of great value to physicians, nurses and relatives in preparing diets for patients.

The work as a whole is particularly valuable because of the clear, concise, and yet simple answers to a host of questions which are constantly being asked by the tuberculous, but which are seldom answered in such a way that the patients are satisfied.

A. S. T.

Gynecology. The Practical Medicine Series, 1916, Vol. IV. By E. C. Dudley, A.M., M.D., Professor of Gynecology, Northwestern University Medical School, etc.; and H. M. Stowe, M.D., Assistant Professor of Obstetrics, Northwestern University Medical School, etc. The Year Book Publishers, 327 So. La Salle street, Chicago, Ill. Price, cloth, \$1.35.

This small volume, incorporating the recent progress of gynecology, is so accurately outlined and concisely classified, and the matter extracted from the long articles is so clear and comprehensive that it is undoubtedly a reminiscence of the text books and many writings of Dr. Dudley.

It does not cover the entire field of gynecology by any means, but is an unusually valuable review of the progress which has been made during the past few years, and as such is of great importance to the specialist in the diseases of women.

Both surgeons and gynecologists who are not familiar with the experimental work of Sweet, Chaney and Wilson relative to intraabdominal adhesions, might find it greatly to their advantage to spend a few moments on pages 37 and 38. It is to be regretted that the authors have failed to mention Dr. C. B. Lyman's work on the prevention of postoperative adhesions by the use of amniotic membrane.

Nowhere else in the literature perhaps can one find such a complete and time-saving collection of the various recent theories, experiments, and advancements pertaining to tumors (more especially malignant) of the female genitalia. One needs only to glance at the head lines to appreciate how gynecologists alike in this country and abroad are bending their energies to overcome the devastating ravages of malignancies of the female reproductive organs.

As a natural consequence of the European war by far the greatest part of the literature from which this book was compiled is by American authors.

L. J. W.

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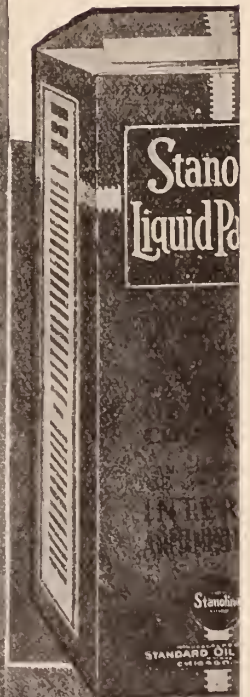
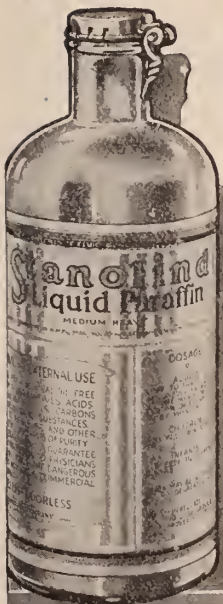
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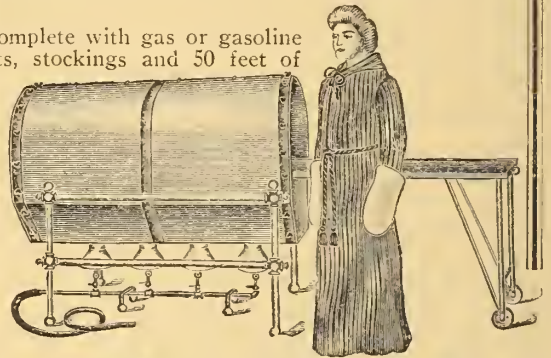
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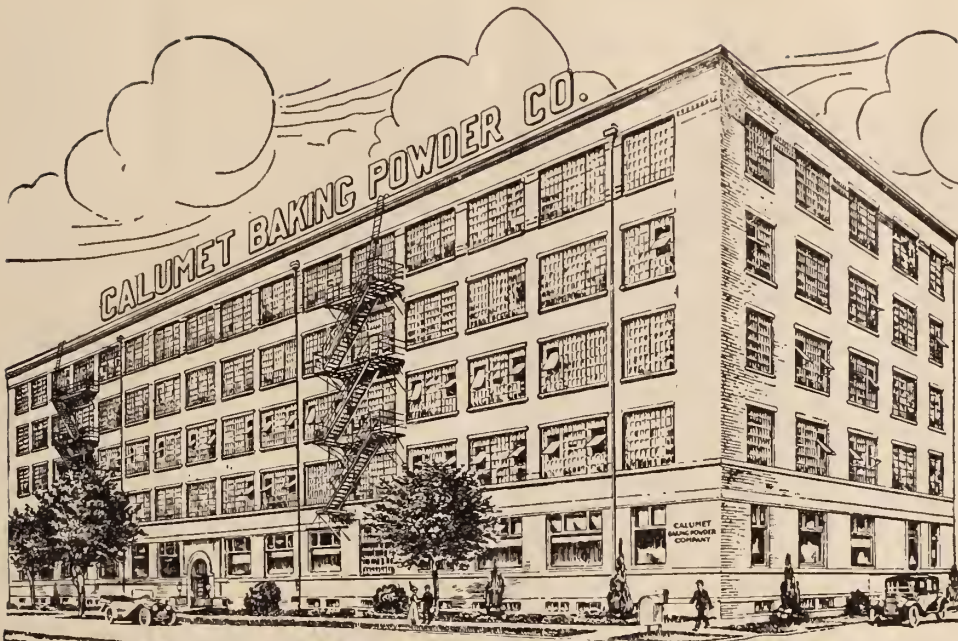
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Editorial Comment

TREATMENT OF SYPHILIS OF THE CENTRAL NERVOUS SYSTEM.

Whatever may be said regarding the effectiveness of salvarsan in the treatment of syphilitic infections, it is quite obvious that it has stimulated to renewed activity the study of the nature of the varied manifestations of this disease. Step by step, there has been a better understanding of the processes which are the immediate results of infection, but more particularly have the more remote effects including the so-called parasyphilitic diseases been illuminated.

The discovery of the treponema, the reaction of Wassermann with its refinements, and the discovery of salvarsan have all contributed to the prospect of affording relief in those hitherto unimpressible diseases of the central nervous system which have now been traced to the influence of the syphilitic organism. General paralysis of the insane and tabes dorsalis, or locomotor ataxia, have stood preeminent as resisting the attempts to control or conquer their characteristically steady, but gradually progressive course.

The hope and encouragement which were revived through the intraspinal form of treatment from time to time by mercury and arsenic, were renewed by the announcement of Swift and Ellis of a plan deprived of the dangers previously experienced, only to be shaken by adverse reports from clinical as well as laboratory observers.

In a recent study, I. C. Walker and D. A. Haller (Arch. Int. Med., Vol. 18, No. 3, pp. 376-425) attribute the opposing views to the

limited experience of the observers, leading to the founding of varied opinions upon cases which were either favorable or unfavorable from the beginning. With this view in mind, they report in great detail their experiences in the treatment of seventy-five cases, including forty-eight of tabes dorsalis, six of general paresis of the insane, sixteen of cerebrospinal syphilis and five of syphilitic meningitis. The patients were grouped in accordance with the manner in which they were treated, namely, those in whom intravenous salvarsan alone was used; those in whom intravenous salvarsan was administered in conjunction with intraspinal salvarsanized serum; and those in whom only the intraspinal salvarsanized serum was employed.

All patients with syphilis of the central nervous system were first treated with salvarsan alone: if, after four or six injections of salvarsan, "much improvement or a change in the Wassermann reaction and cell-count in the spinal-fluid" did not occur, the intraspinal salvarsanized serum was employed in conjunction with the intravenous salvarsan, which was usually followed by improvement in clinical symptoms and laboratory findings.

In order to determine the value of intraspinal treatment alone, patients were selected whose serum reaction was negative and the spinal fluid positive, with the result that these improved from every viewpoint.

It is difficult to understand the assertion, however, that "mercury in the form of injections and intramuscular injections was employed very little because of the frequency of a falsely negative Wassermann reaction following its use".

Treatments were given at weekly intervals to all patients during the first eighteen months, but for reasons in individual cases varied from three weeks to irregular periods after this time.

The reactions varied from considerable severity to none at all. A moderate reaction, consisting in an aggravation of the symptoms lasting a few hours, was found to be desirable, since more improvement followed than when the reaction was slight or absent.

As a final result of the treatment, thirteen out of fifteen patients, previously incapacitated, were restored in their "economic value"; they were able to and did work. Two, previously unable to walk, were able to get about aided by a cane. Four relapses occurred, one tabetic, two paretic and one cerebro-spinal. Four patients died, three of pneumonia and one of cerebral hemorrhage, the latter the result of an antecedent blood pressure of 240 mm. of mercury. The best results were obtained in tabes. Two out of six patients with general paresis were restored to working capacity without return of symptoms for fourteen and seventeen months respectively.

Among the conclusions it is stated: "That intraspinal salvarsanized serum greatly benefits patients with central nervous system syphilis is shown by the fact that those with negative serum reactions and with positive spinal-fluid findings are symptomatically relieved by this treatment." In many, the spinal-fluid Wassermann becomes negative with 1 cc., the cell-count becomes normal and the globulin reaction (Noguchi) negative, without other medication.

The report concludes with a brief report of the clinical course of fifty-seven cases.

On the whole, more improvement is shown than has been recorded as a result of this or other forms of treatment thus far advocated, with the added advantage of being more sustained in spite of the fact that the laboratory findings have in no instance been reduced to the normal, even in the most intensively treated cases.

This presentation further comments upon the unfortunate fact which has been previously observed, that cases in institutions

may be more completely treated than those in private care, in view of the expense involved prohibiting or inhibiting as it does the treatment where, as is so often the case, expense is a factor, and especially where the patient's circumstances are moderate.

The hope stimulated is that more uniform results may be obtained in all laboratories and at the same time on a more economical basis, thereby placing adequate treatment of these afflictions within reach of all or rendering the results so sure as to justify or merit the expense involved.

G. A. M.

THE PUBLIC AND THE NEW MEDICAL LAW.

Now that the vote has been counted and the returns seem to show that the Medical Bill has been endorsed by popular vote, in other words that the action of the last State Legislative Assembly in this regard has been approved, it may be timely to comment as to just what benefits are to be derived, or what advantages the enactment of such a law may hold for the medical profession.

It appears to be an opportune time to place before the minds of those who have been and are willing to criticize the better aims of the profession the facts with relation to the public health and the endeavor to protect the public against deception, fraudulence and quackery in the care of the sick by those unqualified, especially as measured by the ordinary standards of knowledge. An adequate knowledge of the human system in its physical make-up and its ordinary functions, with the ability to recognize its disorders, would seem to be requisite in establishing a minimal standard. It is almost as incredible as inconsistent that it is only where human life and health are concerned that special fitness and capability are not essential to be evidenced by candidates for license to practice, while the electrician, the plumber, the public accountant and others are required to demonstrate a proper learning before being permitted to practice.

In this matter of promiscuous licensing of the unqualified, this country as a whole stands preeminent and is beset with laws

more confused and more inefficient than obtain in any other civilized nation of the world. In most countries outside of our own, the measure of the qualifications of those who are permitted to take care of the sick is controlled by the central government, while in this country the protection of the people against the ignorant and incompetent who assume a capability to cope with the ills and disorders of the human body without a fundamental knowledge of its structure or function has been left to each of the individual states.

It is extremely difficult to see how any competent physician can be affected in one way or the other by the passage of a bill destined to protect the people against such unqualified impostors.

It is also difficult to understand why the medical profession should be the target for epithets reflecting on the validity of its claim to a scientific calling. Not only are these reflections against the standard of mental development, but they are serious aspersions against the richly endowed scientific institutions of learning of America; and it is none the less humiliating that the university graduate, who has devoted four years to careful training in the paths of scientific learning well trodden by the most capable men the world has known for many centuries past, should, by pessimistic arguments and limited citations of questionable disease, be placed on a par with the disciples of unscientific schools, representing as they do six months' to a year's training without preliminary education and oftentimes a bare knowledge of English.

How feeble are the arguments presented in support of the anti-medical views when confronted with the public health conditions in civilized nations, as well as such notable examples as the change in health conditions in the Philippines, Cuba, the Canal Zone, and the influence of medicine in military affairs exemplified so well by Japan a few years ago and also by European powers at the present time!

Is it possible that the defenders of medical freedom, so called, can attribute to anything other than organized medical effort the extension of the period of expectancy of

life from twenty-five to thirty-eight years? Is it to anyone else that the absence of yellow fever and typhus, the rapid suppression of bubonic plague, of typhoid fever and of the malignant types of malaria, the fearlessness with which small pox is confronted, and the lowering of the mortality in diphtheria from sixty to five per cent. may be credited?

Is it to be said of any other profession that their aim and whole work are being constantly directed toward the diminution of the very conditions which constitute the sole source of their revenue? It is difficult to comprehend that this attitude contributes to the establishment of a "Medical Trust", but if so, it is the antipode of all other varieties of "Trust."

G. A. M.

THE EUROPEAN BIRTH-RATE.

Before the war, discussions regarding the decrease in the birth-rate of the countries of northern Europe had for many of the inhabitants of those countries a relatively academic interest. But the human frame cannot be manufactured so simply or readily as shells, rifles, machine guns, or even Zeppelins and warships; so that the vital need for an adequate supply of those who may kill and be killed has stirred an interest in this problem which did not formerly exist. The British government has professed its interest in the proceedings and report of the National Birth-rate Commission, which is composed of clergymen, physicians, statisticians, publicists, and others, and which has recently published a volume* of four hundred and fifty pages, containing the chief parts of the evidence placed before it. The Commission actually began its work before the war, but the scope of its inquiry and the interest displayed therein have undoubtedly been greatly enhanced by the gigantic struggle which is being waged on the continent of Europe.

The statistical evidence seems to show unmistakably that the birth-rate has been falling rapidly in Great Britain and also in the other countries of northern and western Europe, with the remarkable exception of Ire-

*Reviewed at some length in the *Edinburgh Medical Journal*, vol. 17, No. 2.

land. In Italy, and in eastern and south-eastern Europe, there is little or no evidence of a declining birth-rate. In England and Wales the birth-rate has fallen about one-third in the past thirty-five years as compared with what it had been during the previous forty years. As regards Germany, although the downward tendency is here of more recent date than in some other countries, the decline appears to have been correspondingly more rapid since it began. In all the provinces of Ireland, with the exception of Ulster, there has been an increase in fertility in the last few years. This is explained by one of the medical witnesses before the Commission on the ground that artificial restraint has become more prevalent in England and other countries, whereas the upward tendency in Ireland represents the result of increased prosperity among a population with whom the religious objection to artificial restraint is effective.

The Commission was apparently disposed to believe that the fall in birth-rate was not largely due to changes in the marriage rate or in the average age at marriage, or even that the higher education of women had anything to do with the decline, since there appeared from statistics to be no physiological difference between the fertility of college and non-college women. Various rather abstract theories, such as that of cyclical variation in the natural power of procreation, or that of variability of germinal vitality, were contradicted by the Irish figures. Influences definitely recognized as favoring the decline were as follows: The birth-rate in England and Wales was lower in districts having a higher standard of living, lower inversely as the social status of the parents, and lower inversely as the size of the habitation. Contrary to the belief of the followers of Malthus (that increase of population reduces the means of subsistence), the Commission does not appear to think that a further reduction in the English birth-rate would at the present time give a larger yield of wealth per head, although "we must face the fact that every rise in the condition of the artisan tends at present to lower the birth-rate in his class". Incidentally the Commission remarks that war in its effect upon the quality of the population is gener-

ally admitted to have a selective power which is dysgenic instead of eugenic.

The suggestions made by the Commission for arresting the decline in birth-rate include state bonuses for families under certain conditions, remission of income tax according to the number of children, economic improvements aimed at the conservation of infant life, and a maternity and child welfare scheme which would tend to check infantile and child mortality not only after but before birth.

UNSCRUPULOUS ADVERTISING.

The Denver Express, "the paper that is independent", must be feeling the pinch of the struggle for existence. A Denver optical concern, well known for breezy advertising, has by satisfactory methods persuaded the Express to place the stamp of its approval upon the correctness and conscientiousness of the work done by these opticians. A somewhat rhapsodical editorial entitled "I am the eyes of a child", which we are told has appeared in over five hundred newspapers in the United States and Canada, was also printed in the Express—in the form of a page advertisement paid for by the optical company. A leading official of the Denver School Board has written his enthusiastic approval of the rhapsody, in a letter addressed to the Express. The department of public instruction in the state of Colorado, in a letter signed officially by its deputy superintendent, furnished a testimonial concerning the article directly to the optical concern. Both of these letters were included in the page of advertising. The consummation of the clever scheme is in the form of a circular letter addressed by the Denver Express, "the paper that is independent", to every school teacher in Denver, and we presume in Colorado, calling attention to the "great public service" rendered by the optical company in going to the expense of this advertising page, asking the teachers to cooperate with the advertiser, and stating that the Express knows "that their advice is scrupulously correct and conscientious".

This may be good business. We are in some doubt as to its independence and morality.

BODY-SNATCHING.

There is a popular tendency to offer excuses for the starving man or woman who steals food. On a somewhat similar basis, in the days when scientific research was foolishly hampered by the impossibility of obtaining adequate material for anatomic study and training, many scientific men and teachers of excellent character and reputation attached little blame to the practice and practitioners of the gruesome art of body-snatching. In the present day the supply of material for the dissecting room is usually ample without the necessity of breaking the law; and medical students and graduates look back on the practice of systematic body-snatching as a picturesque detail of the almost forgotten past.

The Washington Medical Annals (vol. 15, No. 4) recently published for the delectation of its readers a discussion by Dr. Llewellyn Eliot of a paper by Dr. Frank Baker which does not seem to have been available in print to the medical public. Dr. Eliot's father was a body-snatcher, by reason of his duties as demonstrator of anatomy. We are not told whether the son followed the same pursuit, but amusing stories are given of the events which sometimes led to the utilization of bodies which the relatives supposed to be peacefully slumbering in the tomb. Thus, a demonstrator of the Columbian Medical College having removed to his dissecting room the body of a brother mason, suspicion was somehow aroused and an investigation ordered. The grave having been found empty, permission to search the college was asked for and granted. But when the investigating committee arrived, the body had disappeared—under a section of the flooring of the dissecting room. After the committee had left, the flooring was again raised and the body placed on the dissecting table. Bodies were sometimes packed in whiskey barrels and shipped by express. When the supply was small and the demand great the price is said quite commonly to have been as much as one hundred dollars for a good subject, although at other times contracts were made to furnish material for college purposes at fifteen dollars a piece. Among

the odd characters recalled by Eliot was a negro preacher, who took part in both the burial and the subsequent resurrection of the bodies of his congregation. One body-snatcher had an able assistant in a woman who apparently took great delight in attending funerals. Having begged a few flowers from the coffin of the dead person, she would drop these near the grave as a means of locating the body which was to be stolen.

Eliot quotes Sir Astley Cooper as having said before a committee of the English House of Commons: "There is no person, let his situation in life be what it may, whom, if I were disposed to dissect, I could not obtain. The law only enhances the price, and does not prevent exhumation."

DENVER'S NEW MEDICAL LIBRARY AND HALL.

After some delay, the date for the formal opening of the new building, next door to the Metropolitan Building, which is to be used as the quarters of the medical library and as a meeting hall for the medical society in Denver, has been arranged for Wednesday, November 29th. The address of honor will be given by Dr. Livingston Farrand, president of the University of Colorado. The formal meeting in the new meeting hall will be preceded by a dollar dinner to which, as well as to the subsequent meeting, every member of the state society is cordially invited, and the place of which will be announced on return postal cards which will be circulated shortly. The hour of the dinner will be six-thirty p. m., and of the formal exercises eight-thirty p. m. Denver members are hoping to meet a large and representative group of visitors from other parts of the state.

Additional U. S. Public Health Officers to be Provided.—Congress has recently made an appropriation for thirty-three additional Assistant Surgeons in the United States Public Health Service. These officers are commissioned by the President and confirmed by the Senate. The tenure of office is permanent, and successful candidates will immediately receive their commissions.

All grades receive longevity pay, 10 per cent in addition to the regular salary for every five years up to 40 per cent after twenty years' service.

Original Articles

CONGENITAL PYLORIC STENOSIS.*

J. F. BINNIE, A.M., M.D., F.A.C.S., KANSAS CITY, MO.

When food is taken into the stomach it is ground and mixed with gastric juices until it becomes a more or less soup-like material (chyme) which is intermittently ejected into the duodenum.

The muscular mechanism which regulates the passage of the chyme is the pyloric sphincter.

The pyloric sphincter consists of a strong bundle of non-striated muscle fibres continuous with the circular muscle of the stomach but not with that of the duodenum.

The thick circular muscle of the pylorus gradually merges into the thinner circular muscle of the stomach but ends abruptly where the duodenum begins. Some of the outer or longitudinal muscular fibres of the stomach pass over the pylorus to the duodenum. Many of them however end at the pylorus by dipping down and losing themselves among the circular fibres. In the infant, looked at from the gastric side the pylorus is more or less funnel-like, while from the duodenum it roughly resembles the cervix uteri as it projects into the vagina. The pyloric sphincter is constantly closed—only opening to permit the intermittent passage of chyme. It is difficult to estimate the normal calibre of the pylorus. We know that it is capable of permitting the passage of bodies an inch or more in diameter and that at times the canal seems almost impermeable. When the pylorus is closed its lining mucosa is thrown into longitudinal folds, this being possible because of the looseness of the submucosa.

Such being the structure and function of the pylorus one can easily imagine the occurrence of certain abnormalities of function and of structure. For example it would be fair to presume that various visceral stimuli would cause spasmodic closure of the pylorus. This is very evident in many dis-

eases—cholelithiasis, appendiceal dyspepsia and eminently so in duodenal and gastric ulcer. In infants Cantley describes a functional pyloric spasm due to errors in diet (Brit. Med. Jour. Oct. 13, 1906) but in which there is never any hypertrophy of the pyloric muscles. The symptoms of pyloric spasm are very like those of stenosis but are very amenable to proper dietetic treatment. In the same way one might assume that an undue amount of muscular material might be used in the development of the pyloric sphincter, and that an overpowerful muscle might render difficult or impossible the normal ejection of chyme from the stomach. The consensus of opinion seems to favor this as being the origin of congenital pyloric stenosis. This stenosis, unlike that due to pyloric ulcer, etc., is not caused by the contraction of cicatricial tissue but by the presence of a too efficient sphincter.

The pylorus (including the whole pyloric canal) is the site of muscular hypertrophy in congenital stenosis. The hypertrophy affects principally the circular fibres. As normally the greatest mass of muscle is situated at the pyloric ring, that is next to the duodenum, one might imagine that in pyloric hypertrophy the walls of the whole pyloric canal would be uniformly thickened to appear like a cylinder, or that it would be more or less cone-shaped with the base of the cone next the duodenum. Such is not the case, the tumor being usually oval or olive-shaped.

Harold Stiles explains this shape as being due to the action of the longitudinal muscular fibres pulling on the pyloric ring in endeavors to overcome the obstruction caused by the contraction of the circular fibres. Whether this explanation is correct or not the fact remains that the pylorus presents an olive-shaped tumor and no evidences of any present or past inflammation are to be found.

When the outlet of any hollow muscular organ is obstructed, energetic efforts to overcome the obstruction cause hypertrophy of the muscles employed; when the obstruction persists, dilatation of the organ and atrophy take place unless evacuation through some other orifice is easy or even in spite of

*Read at the annual meeting of the Colorado State Medical Society, September 5, 6 and 7, 1916.

such abnormal evacuation. In congenital pyloric stenosis or hypertrophy it is the rule to find hypertrophy of the gastric muscles and later dilatation of the viscera.

The increased size and power of the pyloric sphincter may not be sufficient per se to obstruct more than very partially the onward passage of the chyme, aided as that passage is by the exaggerated gastric peristalsis and by the pull of the longitudinal muscles opposing the complete contraction of the sphincter. The mucosa, thrown into a few longitudinal folds and perhaps swollen and covered by some plugs of mucus, is capable of completing the obstruction of the already narrowed canal. Of course spasmodic contraction of the hypertrophied sphincter can aid in the obstruction.

From the number of factors which can take part in the trouble, primarily or secondarily, it is easy to explain the variation in degree of obstruction noted in different cases and the fact that dietetic or medical treatment may lead to recovery. The hypertrophy may conceivably not infringe too seriously on the lumen, the mucosa may not be engorged or thickened, plugs of mucus may be absent and muscular spasm may fail. If the hypertrophied muscle when at rest does seriously narrow the canal, then it is inconceivable that any nonoperative treatment can avail. The happy results which are reported following medical treatment must have been because the factors of secondary consequence (e. g. spasm, mucosal engorgement) were causing the obstruction while the hypertrophic mass of muscle was not narrowing the canal to too great an extent.

Symptoms.—The symptoms may appear within a few days of birth or may exceptionally be delayed until the second month. Usually they become evident within the third or fourth week.

Emmet Holt thinks that when the symptoms arise within a few hours or days after birth the condition is usually one of spasm and not of hypertrophy.

Lack of appetite is often present but may escape notice. The first striking symptom is vomiting. This is not the easy, tranquil regurgitant vomiting so common in babies, but is explosive, the ejected material being

thrown forcibly for a considerable distance even as far as three or five feet. The vomiting does not depend much on the quality but rather on the quantity of the food taken. Each meal may be expelled or several may be retained and then thrown out together. The vomitus consists of the ingested food and rarely if ever contains bile. The tongue is clean and moist. Constipation is marked. Such stools as pass are "meconium-like, consisting of epithelial debris, intestinal secretions, altered bile and blood." As all or practically all the food is vomited the child is starved and rapidly wastes. Usually there is great hunger and the patient craves food as soon as the stomach is emptied. Absence of absorption of fluids is evidenced by scanty secretion of urine. On examining the abdomen one generally notes some bulging in the epigastrium and a sinking-in about the hypogastrium. Peristalsis, both visible and palpable, is to be observed passing as a wave from left to right over the epigastrium. It is of course best seen soon after feeding and is painful. If the patient survives without relief until the stomach is dilated peristalsis becomes much less evident. Dilatation of the stomach is a late symptom and hence ought not to be of value for useful diagnosis.

Palpation a little to the right of and above the umbilicus usually reveals the presence of a tumor having the shape and consistency of a green olive and about the size of the last joint of the little finger of the average adult. When a peristaltic wave passes along the stomach it often makes the tumor more evident. In other cases tumor, though present, may be out of reach under the liver.

The great symptoms of congenital hypertrophic pyloric stenosis are:

1. Explosively expulsive vomiting with resultant emaciation.
2. Visible gastric peristalsis.
3. Persistent constipation.
4. Oliguria.
5. Tumor (not always palpable).

In pure pyloric spasm the vomiting is not likely to be so expulsive as in hypertrophy, nor is gastric peristalsis so evident. Treatment by means of properly regulated diet

and perhaps of antispasmodics usually promptly leads to disappearance of the symptoms.

In doubtful cases roentgenology is valuable in diagnosis.

Undoubtedly the stenoses vary in degree, as has been hinted in the preceding paragraphs. A fair number of patients survive and apparently gain perfect health. Others retain life but must devote their lives to the care of their stomachs.

Maylard, William Russell and others describe congenital pyloric stenosis in adults. Such stenoses are ring-like, uniform narrowings of the pylorus without any evidence of present or past inflammation and are discovered during exploratory gastrotomy for obscure gastric symptoms. If these surgeons are correct in their findings and interpretations such stenoses are probably the sequelae of 'cured' or unrecognized congenital hypertrophies. Stanley Stillman (Jour. A. M. A., Nov. 6, 1909) has collected 27 cases which were treated in the Pacific coast states. "Of these 27 cases, the diagnosis was verified by postmortem or operation in 15. Of the remaining 12, the diagnosis in 7 was made by men of the highest standing and experience; in one of these operation was urged but refused, and the infant died. In 2 others a tumor was present. The remaining 4 I class as doubtful.

"Of these patients one died, and the records were lost in the fire of 1906. One has vomited since birth at intervals of four to ten days, and is now five years old. One is reported cured after three years, and one is under treatment—a very recent case. Of the 27 patients 18 recovered and 9 died.

"Eleven were operated on, of whom 9 recovered and 2 died. Sixteen were treated medically, of whom 9 recovered and 7 died. Subtracting from these 27 cases the 4 doubtful ones, and a case in which no tumor was found at operation, there are left 22 undoubted cases of hypertrophic stenosis.

"Of these patients 15 recovered and 7 died. Ten were operated on and 12 were treated medically. Of those operated on, 8

recovered and 2 died. Of those treated medically, 6 recovered and 6 died.

"Of those recovering after operation, all have remained well and are healthy normal babies in appearance. Of those dying after operation, one died forty-eight hours after, and the other after a second operation performed five days after the primary one, which was a gastroduodenostomy and failed to relieve the vomiting. * * * Of the six patients said to be cured" (by medical treatment) "so far as vomiting is concerned, one is still restricted to semisolid food at 5 years; a second weighs only 7½ pounds at 5 months; a third 9¾ pounds at 7 months; 2 are still under treatment, and only 1 is in positively satisfactory condition. This child weighs 13¾ pounds at 6 months. Of the 6 patients dying under medical treatment, 1 died of pneumonia, and 1 of collapse from heart trouble. Was not their starved condition responsible for their inability to contend with these affections, and are not all these infants, during the many weeks and months in which they are going down hill preparatory to "rounding the corner", as Hutchinson puts it, in greater danger of their lives from some intercurrent affection, or from failure to "round the corner", than they are from death due to a timely gastroenterostomy?"

The mortality after operation has been put down at 50 per cent., but this figure was obtained from statistics which included all the earlier operations, when surgeons were feeling their way as to method, when most of the patients were far gone before operation was considered justifiable, and when the technique of gastric surgery was not so well established as it is today.

The following table makes the mortality 26 per cent:

TABLE A.

	Gastroenterostomies Almost Exclusively.		
	No. of Cases.	No. of Deaths.	Percentage.
Downes	22	7	31.8
Scudder	17	3	17.6
Richter	22	4	18.1
Roland Hill	10	5	50
Stillman	10	2	20
Holt	28	14	50
Binnie	2	0	0
	111	33	31.5

TABLE B.

Modern Pyloroplasties and Pylorotomies.		
Ramstedt	2	0
Lilienthal	1	0
C. S. Mixer.....	8	12.5
A. A. Strauss.....	20	5
	31	2
Total—Tables A and B.		
	142	37
		26

The only old statistics included are those of Stillman, and these are given place because they are from the practice not of one specialist but of a number of surgeons on the Pacific coast. Even today many of the infants are brought to operation in a terribly emaciated condition due to too long continued starvation under medical and dietetic treatment, and this raises the mortality records abominably and unjustifiably.

In Broderick's tables published in 1909 (Am. Jour. Obstetrics) the mortality after operation was found to be 50 per cent, while after medical treatment (15 cases) it was 53.3 per cent. But one must add that, besides those cases counted as having been under medical treatment, his tables contain mention of twenty other cases, in all but two of which autopsy findings are noted as typical, all were fatal, and none were treated surgically. It is fair to presume that some of them had been treated medically. If even a few of these are assumed to have been treated medically the mortality of non-surgical treatment would be greatly raised. Under medical treatment and after gastroenterostomy the tumor persists. It is well established that in the absence of pyloric occlusion little or no food will pass through a gastroenterostomy opening. Seudder has investigated many of his patients and finds that in none of them does the food fail to pass through the neo-stoma; therefore the pyloric occlusion must persist.

When one compares the mortality after medical treatment and after surgical treatment one is compelled to conclude that provided an efficient surgeon and proper surroundings are obtainable every evident case of congenital pyloric stenosis ought to be promptly subjected to operation. Only in doubtful cases, and the use of the X-ray will tend to lessen the numbers in this class, is it

justifiable to attempt a cure by medicinal and dietetic means. If non-operative treatment is tried a continuous watch must be kept up, especially regarding the gain or loss in weight of the patient. Conscientious lavage may keep the stomach so empty that vomiting and peristalsis may cease to be symptoms and yet the patient be starving.

Surgical Treatment.—Preliminary treatment.—Endeavor to strengthen the child as much as possible by means of nutrient enemata but do not waste much time in so doing as this means of alimentation is not extremely dependable, and once a child starts down hill rapid deterioration is the rule. Before operation wash out the stomach thoroughly and aspirate the last of its contents. Do not use any strong antiseptic in preparing the skin for operation. Have the child well protected against chilling. During operation it is wise to give salt solution under the skin. Ether is the safest anesthetic and ought to be administered by an expert. During operation do not waste time by any exploration to satisfy curiosity.

After-treatment is important, and the surgeon is fortunate if he can secure the services of a good pediatrician. The small intestines have never had any opportunity to carry out their normal functions, and hence the diet must be carefully regulated both as regards quality and quantity.

Operation.—We need not discuss pylorotomy or jejunostomy as means of treatment. These operations have been tried, found improper and discarded. The same is true of the Loreto operation, pyloric divulsion. It is brutal, dangerous and commonly ineffective.

The treatment in vogue now consists either of gastro-enterostomy or of some form of pyloroplasty.

Gastroenterostomy has been the favorite operation with most surgeons and has given excellent results. It has the advantage that its steps are much more familiar to the general surgeon than are those of the much more complicated classical pyloroplasty, and as one eminent and experienced surgeon remarked to the writer, in gastroenterostomy it is much easier to correct any mistakes one may make than in the other operation. Of

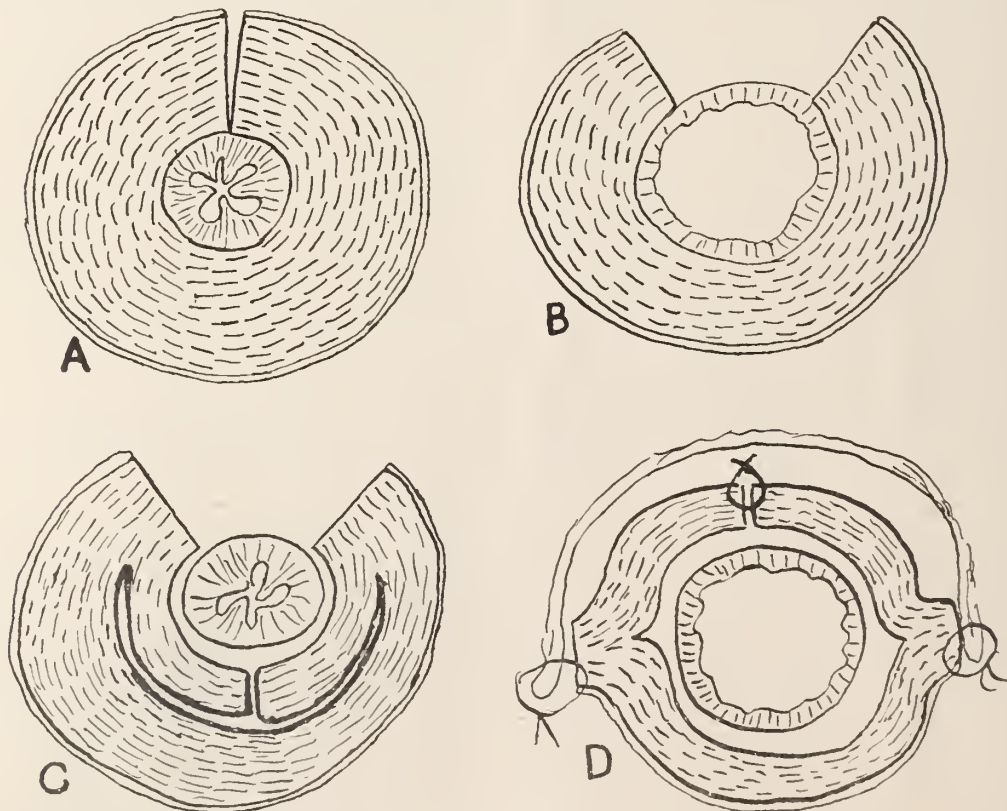
course no serious mistakes ought to be made and call for correction, but they are made occasionally by the most careful men. Anterior gastroenterostomy is supposed to be easier than posterior but has the evident disadvantage of a long loop of jejunum above the anastomosis, and hence there is danger of obstruction by kinking due to the weight of biliary and pancreatic secretions, etc., in this loop pulling it down. This is the true cause of the so-called vicious circle. Posterior gastroenterostomy if performed by the no-loop method has no such disadvantage and is not a difficult operation. The use of gastroenterostomy clamps of suitable size and delicacy is an advantage, but occasionally they cannot be applied. If before operation the stomach contents have been aspirated the lack of clamps is no great evil, especially as hemostasis can be more readily assured.

Pyloroplasty.—The Mikulicz and Finney operations are unsuitable, because the hard thick musculosa makes accurate and efficient closure difficult. Nicoll's operation deserves special notice because it was an early method and gave good results, though

it may be discarded in favour of simpler procedures. Nicoll made a V-shaped incision over the pylorus transversely to its long axis and down to but not through the mucosa. As this incision might well fail to cut all the fibres of the hypertrophied sphincter, it was sometimes necessary to dilate the sphincter by a forceps passed through a puncture wound of the stomach. After dilatation was completed the gastric puncture was closed, and the V-shaped pyloric incision was closed so as to form a Y. The basal defect in Nicoll's operation was that the incision did not necessarily completely divide the offending muscle.

The simplest operation of all promises to be as effective as any. It is really a pylorotomy rather than a pyloroplasty, and was devised by Ramstedt.

Ramstedt's Operation. Open the abdomen by a 1½ inch incision through the right rectus muscle above the umbilicus. Deliver the pylorus and bring its upper surface forwards. Make a longitudinal incision from end to end of the tumor in a bloodless area. Incise the whole musculosa but leave the



A and B: Ramstedt's pylorotomy.

C and D: Strauss' pyloroplasty.

mucosa intact. Do not suture the pyloric wound. Close the abdomen.

Webb has modified Ramstedt's operation by separating the mucosa from the musculosa for a distance of about $\frac{1}{4}$ inch on each side of the longitudinal cut.

If one is afraid to leave the pyloric wound gaping in the abdomen one might easily cover it by a free flap of omentum, but probably the omentum will do this covering by itself if left alone.

Alfred A. **Strauss' operation** is much more complicated than Ramstedt's and is a true pyloroplasty.

Expose, deliver and incise the pylorus as in Ramstedt's method. Completely separate the musculosa from the mucosa, leaving the latter as an intact tube. Lift the mucosa out of its muscular bed. Opposite the primary pyloric incision make a corresponding incision from the inside penetrating half way through the musculosa. From this secondary incision construct flaps consisting of half the thickness of the musculosa and hinged at the anterior or primary incision. Pull these flaps over the mucosal tube, which is now dropped into its normal position. Suture the muscular flaps over the replaced mucosa. Peritonealize the repaired pylorus with a free flap of omentum. Close the abdomen. Strauss' operation sounds formidable, but the results are good (mortality 5 per cent).

POSTURAL PROPHYLAXIS IN RELATION TO DEFORMITY.*

ANDREW J. HOSMER, M.D., SALT LAKE CITY, UTAH.

At this time, when infantile paralysis is so prominent in the public mind owing to the great epidemic of this disease in New York City, because this disease furnishes so many of the cripples of all countries, and further because I know so much more can be done to prevent the serious deformities that result from this disease than is usually done by the profession, I am encouraged to pre-

sent the subject, "Postural Prophylaxis in Relation to Deformity."

The principles and measures for this purpose apply not only to cases of infantile paralysis and other forms of paralysis, but likewise to traumatic cases, such as fractures, and to the deformities that may follow wasting diseases. Much suffering, time and discouragement may be saved by knowing and applying the simple principles which I will attempt to recall to your minds, borrowing freely from the writings of my friend Mr. Robert Jones, of Liverpool, England.

Many of the cases which are pronounced hopeless by the majority of the profession present possibilities for cure which are not recognized, because of failure to distinguish the different varieties of paralysis when classified from the casual view point.

Roughly speaking, paralysis, from the view point of causation and its clinical aspect, may be divided into three classes: (a) permanent paralysis, resulting from the complete degeneration of the nerve center; (b) temporary paralysis, resulting from transitory infection or disease of the nerve center; (c) temporary paralysis, resulting from non-use or over-stretching of the muscles involved. (Classes (b) and (c), it is to be noted, may overlap.) The distinction here which is of fundamental importance is between the permanent paralysis, as defined above, on the one hand, and the two classes of temporary paralysis, on the other. The failure to make the distinction between "muscles powerless from non-use" either through mere transitory nerve center disease or through over-stretching, and "muscles paralyzed from cell destruction" is precisely the cause of calling hopeless many cases of paralysis which, as suggested above, present possibilities of relief. In short we may abandon the statement that a muscle which exhibits the "reaction of degeneration" is outside the pale of hope. The "reaction of degeneration" may display itself where the so-called degeneration is but transitory or where non-use or over-stretching is responsible for paralysis of a muscle.

A muscle if stretched for a sufficiently long time will cease to act. It is a functionally disabled muscle, but there is not neces-

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sarily any permanent organic change in the spinal cells which control the muscle, in the conducting nerve, or in the muscle itself. Such an over-stretched muscle, if relieved from strain, will regain its power. Again, where the lesion in the nerve cell is transitory in nature, as in some cases of infantile paralysis for example, "the muscle will perhaps have become relaxed and over-stretched by gravity, by habitual posture, or by the over-action of opposing muscles". We have assumed in the past that, when certain groups of muscles respond to stimuli only slightly, in spite of the slight response there has been cell destruction in the motor area. We must, however, bear in mind that cell destruction is not necessarily so extensive as might appear, and that the affection, so far as the majority of the cells are concerned, is perhaps transient and capable of recovery. Jones says that the results of post-mortems in children who die months or years after the first onset of infantile paralysis may be misleading, for they fail to take into consideration secondary changes which have occurred from non-use of muscles. All that has been said should incline us strongly to the habit suggested by Jones, and to the habit, where it is not possible to make a definite distinction, of treating doubtful muscles as if their impairment was due, not to permanent cell degeneration, but to the other causes above mentioned which make an expectation of recovery reasonable under proper treatment.

Jones says: "We must rather consider the whole nerve muscle apparatus. The lesion of the nerve cells may have been transitory, but in the meantime the muscle has been relaxed and over-stretched by gravity, by habitual posture, or by overaction of opposing muscles. The muscle has wasted from disuse and become incapable of responding to such feeble impulses as come to it from the impaired nerve cell; consequently the normal afferent impulses do not pass up to the nerve cell because the muscular action which originates them is absent, and the whole reflex apparatus, by which the spinal nerve cell and muscle react on each other to their mutual benefit, is put out of gear. Experiments have shown that excision of muscles leads to chromatolysis in

the corresponding nerve cells. Our ideas of the changes that take place in the process of degeneration and regeneration in a divided nerve trunk have been much enlarged in recent years. Are we not warranted in assuming that though in many cases the disease has not killed the motor cell in the spinal cord, recovery of muscular action does not take place spontaneously because the whole apparatus, nerve cell, nerve trunk and muscle, are in a state of disuse, atrophy, and continue to remain so because the muscle, from its mechanical disadvantage, cannot perform its function of contracting, which is an essential part in the circle of reflex and trophic influences."

Many cases of paralytic drop wrist remain hopeless cripples because of the failure to recognize the distinction above referred to, between paralysis resulting from permanent nerve center degeneration and paralysis resulting from other causes; including, as said, mere transitory nerve center degeneration; and because of the non-application, consequent on that failure, of the prophylactic measures to which these cases are frequently amenable. The beginning of these cases of drop wrist is paralysis of the whole arm. As recovery commences the strong groups of muscles overpower the weak. The flexors overcome the extensors, and the flexors are shortened while the extensors are lengthened. Already weak from the initial paralysis, the extensors are placed at a mechanical disadvantage, and they become impotent from non-use. This is the secret of the continuing paralysis, and knowledge of this secret is the key to proper treatment. If the patient can extend the fingers ever so little after flexion, the case is hopeful, for this is an indication that nerve center degeneration is not complete. The treatment of this class of cases is to reverse the process which leads up to the muscular impotency. Begin by lengthening the flexors and shortening the extensors. Rescue the weakened extensors from being over-stretched and then maintain them in the slackened posture long enough to restore tone. In cases of poliomyelitis the early treatment is rest. The head and spinal column should be kept at rest; and in carrying out rest treatment postural errors

should be included. Paralyzed muscles should be placed in a position of relaxation, and no strain whatever of the muscles allowed. The feet should not be allowed in the position of equinus, and the knee should be extended so as to relax the quadriceps extensor. The hand should be dorsiflexed. The duration of rest treatment in acute cases should be about six weeks. After the period of rest should come gentle massage and flexion, as noted below.

In addition to cases of paralysis due to poliomyelitis, there are many other cases of paralysis from various causes, such as trauma, etc., which will respond favorably to this process of relaxing the over-stretched muscles by changing the posture. Jones says that the drunkard's palsy, so often attributed to pressure on the musculo-spiral nerve, is often due to overstretching of the muscles. In correction of paralysis of the deltoid, the postural treatment is to keep the arm abducted from the beginning. This can be done by any method which will keep the arm behind the head. In treating paralysis of the extensors of the wrist and fingers, the wrist should be kept acutely dorsiflexed. In paralysis of the peronei, the foot should be kept everted; and when the calf muscles are involved, the toe should be pointed. Treatment similar in principle is given where other groups of muscles are involved.

In postural prophylaxis of the sort described, certain general principles are, of course, to be borne in mind. Care should be taken not to lessen the muscular blood supply by pressure over the muscular tissue. And not even momentary stretching of the muscles relaxed should be permitted. Successful treatment is dependent upon completely and permanently undisturbed relaxation. The length of time for maintaining the posture for relaxation varies, of course, with the rate at which the reestablishment of muscular tone responds to the treatment; relaxation should be prolonged until the muscles are capable of extending further; in the wrist, for example, until the extensors can further dorsiflex. After this point has been reached, the posture angle should be diminished a few degrees and the diminu-

tion of the angle continued until the normal is reached.

Operative procedure may be necessary in early cases to affect the posture necessary for relaxation—tenotomies for example, or the dividing of bands of fascia; also, in certain cases, by removal of skin areas so as to keep parts continually and for long periods in an over-corrected position. The whole limb should be allowed as much normal functional exercise as possible. When the lower limb is involved, the patient should be allowed to walk, taking proper care that the body weight is properly deflected: in other words the splints or appliances should be adjusted so that there is correct alignment of the limbs and accurate distribution of the body weight upon the joints. Massage and electricity are secondary in value. They aid, however, if used very gently, in reestablishing muscular tone. They should not be used until after the period of relaxation. Let me touch for a moment upon the cases where the paralysis is permanent, that is, where it results from permanent nerve center degeneration, and upon the incidental relation of postural prophylaxis to the operative procedure indicated in such cases. After paralyzed muscles have been relieved from the strain for a prolonged period, and it has been established to the satisfaction of the surgeon that the central motor cells are really destroyed, which is of course true in a certain percentage of cases, we are then driven to tendon fixation or arthrodesis.

In tendon fixation the procedure consists in drawing the tendon of the paralyzed muscle taut and burying it in the bone in such a manner that, after firm healing has taken place, the tendon will prevent the part from returning to its former position of deformity. If the technique has been correct, the tendon will, as a rule, unite with the bone with sufficient solidity to prevent the strain of opposing muscles and the force of the patient's weight from pulling it loose. The tendon does not stretch and growth does not affect the result. The simplest type of deformity to which this method is applicable is varus, an affection resulting from the paralysis of the peronei. In correcting this by the tendon fixation method, a curved in-

cision should be made over the internal malleolus so as to expose the peronei tendons. The tendon sheaths are then split and the tendon liberated. A groove is then made in the surface of the fibula and the tendon buried in the manner above described, so as to draw the part into proper position. If it is felt that there is any chance that the muscle will regain tone, it is wise to bury only half the tendon in the bone, leaving the other half for the muscle in the contingency of its regaining power. Tendon fixation is of course applicable only to properly selected cases.

In flail joints—joints which have to support the body weight and over which there is no muscular control—tendon fixation may in some cases make the joint capable of bearing the strain of walking. But in flail ankle, for example, the only operative success is from arthrodesis, or bony fixation in such a position as to give the greatest motor advantage possible. In arthrodesis of the ankle, if any cavus deformity is present, the sole should be flattened and all tight structures severed. The bone surfaces of the astragalus should be closely hugged by the malleoli, the foot should be fixed with flattened sole in a position of slight abduction, and this position should be maintained for four to eight months.

The incidental relation of postural prophylaxis to these procedures of tendon fixation and arthrodesis—procedures, it has been noted, which are availed of only in cases of permanent nerve center degeneration, that is where postural prophylaxis is primarily of no use—is this: If the surgeon to whom cases of paralysis have come has borne in mind the suggestion that because many cases of paralysis are not due to permanent nerve center degeneration, postural prophylaxis should, at least in doubtful cases, be attempted, such a surgeon in cases of poliomyelitis taken early will, by the time he has discovered that his postural prophylaxis is of no primary value because the case is one in which the nerve center has permanently degenerated, at any rate have derived from the postural treatment a secondary value. That is to say it will have been a pre-operative treatment resulting in

proper posture to be made permanent and as advantageous as possible for tendon fixation or arthrodesis.

I have been interested in this work as a general surgeon for a good many years, and I might report numerous cases that would illustrate the great benefits that come to cripples from applying the principles herein repeated—repeated because, although they are not new, they have not been made clear by teachers or text books. I will make mention of only a few cases that may help to show the benefits derived from relaxing over-stretched muscles.

Cases.—A girl twenty-four years old, who had carried, or rather tried to hide, a paralytic drop wrist and withered arm since she was two years old. The wrist and fingers were flexed to the extreme, and the extremity was useless. On examination I found that the fingers and wrist would extend slightly after flexing them further, and I advised a trial. Accordingly, under an anesthetic, with great care and time I was able to put the wrist and fingers in extreme extension. The wrist, fingers and arm were covered with felt and a cast applied. Some morphine was necessary for a few days to relieve pain. This cast was kept on for six months without change except to allow the fingers a little more liberty. By cutting away some of the cast back of the fingers and wrist, I could notice that the wrist and fingers could extend a little further, so a new cast was applied allowing a few more degrees of liberty. After a few months the wrist and fingers had more life and could extend more, and she could use her fingers in many ways. In two years the cast was removed, and she has a very useful and good looking hand which can be used almost as well as the other hand. The hand and arm have grown and she is no longer trying to hide them.

I believe that nearly all the cases of drop wrist can be restored to almost normal usefulness, or at least be greatly benefited.

Another case where the extensors of the leg were involved was that of a twelve-year-old boy whose leg was paralyzed in extreme equinus. It was fixed and dangling and caused the good foot to become clubbed.

as the boy was trying to get around without even the proper appliances for support. This leg was made very useful, and the boy was put in school and will be on the pay roll because the principles above indicated were applied.

In this case a wedge of bone had to be taken out of the dorsum of the foot to permit restoration and relaxation of the peronei muscles. After a year's rest they worked very well. In many cases of fracture of the leg when the leg has been put up in splints with the foot extended, the peronei muscles are over-stretched and become temporarily paralyzed, and thus a great loss of time is caused to the patient before function is restored.

In putting up fractures, if you must over-stretch muscles, select the stronger group, the flexors, never the extensors unless driven to it.

In cases of wasting disease, like typhoid, when the relaxed patient with weak muscles allows the feet "to hang" in equinus, thereby for a long time overstretching the weakened peronei, you can do much to shorten his disability and put him on his feet more quickly by using some mechanical means of holding his feet at right angles to his body.

These cases mentioned are only samples, but the principle can be applied very often. I know of no reason why the general practitioner or general surgeon should not apply them, and if we do we shall prevent deformity. Let us prepare by knowing how to prevent, and prevent by applying our preparedness.

DISCUSSION.

George B. Packard, Denver. Dr. Hosmer's paper has interested me very much. I think he has given us a great deal of valuable information, and I most heartily approve of the sentiments he has expressed. I do not think we realize how much damage is done in infantile paralysis, particularly by stretching of certain groups of muscles, which takes place on account of contraction of the opposite group.

An important thing in the treatment of infantile paralysis in the early stages is rest, and as a prophylactic measure mechanical treatment to keep the balance of various joints, and in that way we prevent stretching of certain groups of muscles. I think we see these advantages partic-

ularly in spastic paralysis where there is a brain lesion, where the control of the brain over the spinal cord is lost, and in these cases where the foot is extended or the thigh adducted. We must remember that in those cases all the muscles are spastic; not only the group of muscles that are drawn up, but also the opposite group. The reason that deformity is produced is that naturally the flexors are stronger than the extensors; when you take away the control the flexors have the advantage and produce the deformity. By simply doing a tenotomy in these cases, which must lengthen the tendons, you weaken that group. But the results are wonderful from that simple operation. In these cases there is a great tendency at night to assume bad positions, and therefore it is well after operation to keep a brace on to prevent abnormal position at night.

The doctor spoke of wrist deformity. I have seen Dr. Robert Jones treat a good many of these cases of the wrist, particularly fracture, where they assumed that position. He takes the Thomas wrench, and immediately puts them in a position of extension where he can get a much better action of the fingers. That is a very important point.

Posture not only prevents deformity, but in many instances it prevents sickness in growing children. If these patients are taught to assume proper postures and to take exercises during the early grades of school, it makes a great difference in the future of their physical condition.

The American Posture League, which was organized a few years ago, is doing a great deal of work along this line, not only educational but in standardizing things that are used constantly, such as furniture and wearing apparel. I am sorry to say they have not accomplished very much with shoes, particularly for ladies, but they are working a great deal on feet and shoes, and it is quite possible that in time they will bring about a reform in that line.

The early cases of lateral curvature of the spine, whether due to paralysis or static conditions, are greatly benefited by posture, particularly by taking exercises while the patient is assuming the best possible position.

We have in the different types of individuals certain deformities. In one type we have a great deal of lordosis; we have the broad back type where a great deal of strain is thrown upon certain muscles and the sacro-iliac joint, and with very bad postures we get more or less crowding down of the abdominal viscera, so that in these cases a great deal can be done by giving more attention to posture and proper exercises.

Standard Entrance Examinations.—Standard entrance examinations, intended primarily for students of medicine, were held September 18 to 23 at Baltimore. They afford an opportunity for men who have not been able to pursue a high school course to demonstrate that they have an education equal to that obtained in a high school. These examinations are given each year under the authority of the Board of Medical Examiners of Maryland by their entrance examiner, assisted by a corps of specialists in different subjects. Full recognition is accorded these examinations by the New York Education Department.—(Monthly Bulletin, Fed. of State Medical Boards.)

SOME SURGICAL OBSERVATIONS OF CHRONIC FRONTAL SINUSITIS AND ITS COMPLICATIONS *

DON A. VANDERHOOF, M.D., COLORADO
SPRINGS.

The frontal sinuses have occupied a place in literature for about two hundred years, according to Grünwald, but it was between the years 1875 and 1885 that their real relationship to nasal diseases was shown. It was about 1883 that Riberi performed his external operation, such as it was, but the more modern operations only date back to Ogden in 1884. This operation was revived by Lue in 1886, hence the name Ogden-Lue operation. Following these years many operations have been resorted to, both intra-nasal and external, most of them varying according to the originator's technique and desire for radical procedure. However, after all is said and done it must be admitted that the final results desired are the same.

Very free drainage is indispensable, and if this can be obtained by any of the many intra-nasal operations the desired results are oftentimes forthcoming, but frequently on account of numerous recesses and hollows something more than free drainage is required, and now a thorough curetting of the sinus with the idea of producing sinus obliteration is regarded as the only procedure that will heal the diseased condition.

I will report briefly two of the most interesting cases coming under my observation during 1913.

Mr. G. reported at the office on January 13, 1913. He said that three years previously he had had la grippe, for which he was under the care of a general practitioner. The recovery from this illness was apparently complete, with the exception of a slight discharge at times from the left nostril accompanied by tenderness above the left eye, as he expressed it. During the summer of 1911 he was troubled almost constantly with what he called hay fever, which seemed to disappear when the cold weather set in, leaving him with a constant discharge of pus from the left nostril, and almost continuous ten-

derness above and to the inner angle of the left eye. The pain, he said, when present, was always worse between 8 a. m. and night.

On examination of the left nostril a small ribbon of thick yellow pus could be seen in the region of the naso-frontal duct. There was hypertrophy of the uncinate process, as well as the anterior extremity of the middle turbinate. Transillumination was negative. The pharynx and post-nasal space showed slight congestion, as also did the right nostril. The ears were negative.

Examination of the pus showed staphylococcus pyogenes aureus and staphylococcus pyogenes albus.

On January 15, 1913, about one-half of the middle turbinate was removed, as well as the anterior ethmoid cells, which were found to be soft and filled with granulations, but no pus. After cocaineizing the naso-frontal duct and passing the largest sound possible, the left frontal sinus was irrigated daily for six weeks. The solutions used were one-quarter strength dioglyxen followed by Dobell's solution, followed in ten minutes by 30 m. of a 20 per cent. solution of argyrol.

By March 11, 1913, there being very little change in the conditions present, a Good's intra-nasal operation was performed. There was very little difficulty in introducing the rasp and very quickly the frontal spine was filed away, thus enlarging the space between the spine and the orbital wall of the sinus. This was all done under cocaine anesthesia, following the technique of Good as nearly as possible.

A very thorough curettement was done as high as possible at this time and the previous treatment instituted as soon as healing permitted.

All of this time he complained of a little dull aching pain over the left eye with only a slight change in the discharge.

On July 3 a curettement was again done as high up as possible, and as soon as the acute inflammation following this procedure had subsided, alcohol was injected into the frontal, first starting with a weak solution and in a few days using absolute alcohol. This was used for three weeks with no change in the conditions.

The question as to whether the canula was

* Read at the annual meeting of the Colorado State Medical Society, October 5, 6 and 7, 1915.

well up into the frontal sinus was easily settled by the accompanying X-ray pictures, which show a large sinus with no definite marks of disease either here or in the opposite sinus.



Plate 2523, Mr. G., antero-posterior view, showing canula for irrigation well in place.

As the discharge of pus had been very profuse of late an external operation was performed on September 3. His blood pressure having been 200 mm. for some time, an anes-



Plate 2525, Mr. G., lateral view, showing position of canula, as inserted for irrigation.

thesia of nitrous oxide and oxygen was used. The operation itself covered a period of nearly two hours.

A Killian incision was made and was immediately followed by very profuse bleed-

ing. This was controlled by hemostats and no ligatures were used.

Previous to the operation I injected a 1 per cent. methylene blue solution into the frontal sinus, as I wished to know whether the previous solutions had reached all parts of the sinus. Upon opening up the frontal sinus it was found to be entirely filled with granulations, and the methylene blue was found to have penetrated to all parts.

As soon as the anterior wall, with the exception of a small bridge, was removed, the diseased portion of the mucosa was thoroughly curetted, special attention being given to all recesses and hollows. In this case there was great destruction of the mucosa with slight bone necrosis. Hemorrhage was now stopped, after which all of the lower wall was removed.

Instead of continuing as in the Killian operation, as large an opening as possible was now made into the nose with Gallaher's rasps, and after recesses and hollows had been obliterated, curetted and thoroughly cleansed, iodoform gauze was inserted into the operative area, bringing it out at the inner angle of the eye. The external wound was now closed as in any frontal sinus operation and the sinus treated as a granulating bony cavity. Packing was removed on the third day and all parts cleansed and re-packed daily with xeroform gauze. This was continued for some time.

Mr. G., being fearful that he might have a recurrence of the old trouble, insisted that a permanent drainage be left at the inner angle of the eye, regardless of scar, till all parts were healed.

The patient now did very nicely until the last of September, when a profuse purulent discharge again made its appearance and it was necessary for the nose to be washed out twice daily. The sinus was obliterating nicely but slowly. The left antrum was irrigated with negative results.

On October 8, there being no question that the pus was coming from the left antrum, a Canfield's operation was done under local anesthesia, and much foul-smelling pus and granulation tissue were thoroughly removed. The antrum was lightly packed with xeroform gauze, which was removed the second

day, and no repacking done. Instead the parts were thoroughly cleansed with cotton applicators and xeroform powder lightly insufflated.

By the last of October the antrum was entirely healed and the frontal sinus was doing nicely, with the exception that a small amount of pus was found to be coming from the right frontal sinus through a small fistulous opening into the left frontal sinus. This was healed after a few days of treatment.

On February 10, 1914, a considerable discharge of pus was found to be coming from the right post-nasal space. Examination of the nose anteriorly showed nothing, and transillumination was negative, but on removal of the right middle turbinate pus could be seen exuding from the sphenoidal sinus on that side. The anterior wall was removed at once, and the sinus, which was filled with granulations, was thoroughly curetted. The healing of this cavity was uneventful.

During the latter part of February pus began to make its appearance from the right frontal sinus and this time the patient complained of slight pain and tenderness at the inner angle of the right eye. A Good's intra-nasal operation was at once done, with the exception that no gold-plated tube was used.

Following the operation as soon as possible 50 per cent. alcohol was injected into the sinus every other day. This seemed to give very good results but did not entirely stop the discharge. Silver nitrate, 20 gr. to 1 oz., was also used without result. The nose now appeared to be in very good condition and no pus was seen till the last of March, when a large ethmoid cell on the right side was found to be diseased. This was broken down and removed at once. Other cells in the same region were broken into but were found to be healthy.

The daily treatment at this time consisted of cleansing and packing of the left frontal sinus through the external opening, cleansing the left sphenoidal cavity, cleansing and treating the right frontal sinus through the nasal opening, cleansing the right sphenoid, and cleansing the right antrum.

As the patient had had so much trouble a stock preparation of a mixed respiratory vaccine was given him every five days for three months. This gave no results, so he was advised to have an autogenous vaccine made, but refused to do so. I have seen very good results with autogenous vaccines but never a cure.

All operated cavities appeared to dry up slowly but nicely under the treatment, consisting of thorough cleansing followed by insufflation of xeroform powder.

On July 6, 1914, there being considerable discharge of pus from the left antrum, a Canfield's operation was performed. On opening the antrum granulations were found both on the floor and in the region of the ostium. These were thoroughly removed with the curette and the antrum lightly packed with iodoform gauze. On the removal of the gauze forty-eight hours later the cavity was irrigated and xeroform powder insufflated.

At times the patient still has a slight discharge from the right frontal sinus, but as he has no pain a radical operation has been refused, which can not be at all wondered at as he has had so much operative work done, all of which except the left frontal was done under local anesthesia.

The patient has no trouble at present with the sinuses operated upon, except that when he has a severe cold it becomes necessary at times to irrigate them.

Mr. W., aged thirty-five years, came to the office on November 5, 1913. At this time he was complaining of a very severe pain and the characteristic tenderness of a left frontal sinusitis. He denied the presence of nasal discharge except when he had a bad cold. Pain and tenderness he said had been present at irregular intervals for the last five years. He did not remember exactly when they started or know of any cause leading to the present condition.

During the last five years he had been under treatment by a number of different specialists. The eyes had been examined and pronounced negative and at one time he was sent to Excelsior Springs as it was thought the condition might be due to rheumatism. This was his statement.

Transillumination was negative. The an-

terior end of the middle turbinate had been removed at some previous time. There was no pus in either nostril. An X-ray picture showed a cloudy condition in the region of the naso-frontal duct, but the sinus clear.

As it was impossible to sound the frontal a large anterior ethmoid cell was broken down; this was found entirely filled with pus. After breaking down this cell the frontal was catheterized and about two drams of foul smelling pus washed out. The severe pain was at once relieved, although slight headache and tenderness still remained. The sinus received a very thorough treatment by cleansing with antiseptic solution followed by the injection of argyrol. This was continued for some time with very good results so far as the severe pain went, but there was never complete relief.

On January 15, 1914, I curetted the naso-frontal duct and as high up into the sinus as possible, after thoroughly using the Good's rasps. The cleansing treatment was now continued as previously done, with no special results. There was still considerable pussy discharge with slight pains in the head all the time, becoming severe once or twice a week. As he refused to have a radical operation I inserted an Ingals gold tube on April 9th, hoping that by getting a more perfect drainage we might derive some results.

There was a slight reaction with pain that night but by morning the headache was entirely relieved for the first time in many months.

The cleansing treatment was continued as before, the pus almost disappearing after two weeks time.

By June the discharge had not entirely stopped and slight twinges of pain were still sometimes present. The X-ray pictures reproduced in the accompanying illustrations showed the tube well in place.

On August 6 an external operation was performed under ether. As so much time had always been lost in previous operations on account of the severe hemorrhage following the initial incision, I injected one dram of a 2 per cent solution of novocain and adrenalin along the line of the incision while general anesthesia was being induced. This acted very satisfactorily and the slight

bleeding was quickly and easily controlled. The characteristic Killian incision was now made, except that it was not continued so



Plate 4290, Mr. W., antero-posterior view, shows Ingals gold tube in place. This relieved the pain, but disease was not cured even through vigorous treatment.

low down as usual. Upon opening the sinus it was found to be entirely filled with pyogenic membrane. The mucous membrane



Plate 4291, Mr. W., lateral view, again showing position of gold tube.

was now entirely removed without injuring the underlying bone, and the cavity freed of all ridges and partial septa. As the sinus was so constructed that all parts would drain readily into the naso-frontal duct, all of the anterior wall was removed with a little of

the floor, while as large an opening as possible was now made into the nose from the sinus with the Gallaher rasps and punches.

The sinus was now loosely packed via the nose with quarter-inch iodoform gauze, after which the incision was closed with silk-worm gut, with only a small wick left at the outer angle for drainage. This small wick was permanently removed at the second dressing.

The sinus packing was removed after twenty-four hours and the sutures on the third day. The regular after-treatment consisted of cleansing the nose with cotton applicators twice a day, followed by application of 20 per cent argyrol throughout the region of the naso-frontal duet, but not into the sinus. This was followed in a few minutes by a light spray of ehlorectone inhalant.

The patient left the hospital on the seventh day and started coming to the office for treatment on the ninth. The cavity was not irrigated at all until the ninth day, after which time it was irrigated daily for ten days with a boric acid solution.

The recovery in this case was uneventful and pleasing to watch. This operation follows very closely that done by Ropke¹.

Very free drainage is indispensable (Kubut²), and had there been deep orbital processes present the operation as done on Mr. W. would have resulted in failure. Cosmetic results must be looked after, and in this case they have been all that could be desired.

Each case calling for an external operation should be treated individually and not collectively, and whenever possible the extremely radical operation should give way to one of the simpler ones.

Transillumination has proven of very little value in connection with diseases of the frontal sinus. The X-ray, though it does not always demonstrate a diseased sinus, does show the shape and size, and no frontal sinus operation should be attempted without first having X-ray pictures taken. Acute suppurative conditions of the nose should be looked after early, as this would do away with many of our chronic infections of the frontal sinuses, but when they do occur and we find it necessary to resort to operative proced-

ure we must first be sure that all diseased ethmoid cells are removed before attempting any work on the frontal.

We have spoken previously of the necessity of good drainage, and when radical work is done it must be kept in mind that the outer end of the sinus is lower than the curve in the orbital wall, so that to secure good drainage, which is absolutely necessary, all of the floor of the sinus must be removed.

Most of our skilled operators now lean toward conservatism and try every other operation before resorting to the radical Killian, not only on account of the deformity produced, but also because you can never in any case be positive of your results.

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- ²Kubut: über die entzündlichen Erkrankungen d. Stirnhöhlen, etc., S. 207, 1895.
825 North Nevada Avenue.

DISCUSSION.

Thomas J. Gallaher, Denver: I read a paper before the American Laryngological, Rhinological and Otological Society about six years ago, in which I advocated preservation of the anterior wall of the frontal sinus in the external frontal sinus operation. In the typical Killian operation the anterior wall and floor of the sinus are removed. We have done quite a number of these cases since that time, with cure of the suppuration and excellent cosmetic effect. At a short distance it is difficult to tell which side has been operated upon.

One case was reoperated owing to a cell in the crista galli having escaped us. We do not favor opening both sinuses from the same side, as routine, unless both are diseased or in case the septum has been eroded—as advocated by Thorpe of Boston. I wish to report briefly a case which I operated on a few months ago.

Man, 63 years of age, base of the nose very broad, swelling extended into both orbits and palpation showed these swellings to be connected. The X-ray showed the septum of the frontal sinuses gone. The right nostril was full of polyps. I first removed the polyps, and did an exenteration of the ethmoid cells together with removal of the middle turbinate. The frontal sinus did not drain into the nose. Four days later I operated upon him at St. Luke's Hospital under nitrous oxide anesthesia. I performed my usual operation, preserving the anterior wall. Upon opening the sinus membrane a large quantity of pus poured out of the wound. The posterior wall of the sinus was necrotic for one-half inch square. The septum was worn away and a long curved curette could be passed into the opposite sinus to its apex. Both sinuses were filled with a large mucocele. It is strange that this patient had no pain—due evidently to the slow distension, extending over a period of two years. In this case you will notice that both sinuses were operated on from the one

side. He left the hospital on the eighth day cured.

In these operations we have had temporary diplopia only, in some cases lasting six or eight days. The greatest care should be exercised to avoid tearing the pulley from its periosteum—an accident which is almost certain to result in permanent diplopia.

In regard to the X-ray, two views should be taken—antero-posterior and lateral.

In conclusion I desire to say that the external frontal sinus operation is beset with many dangers and should only be undertaken by those specially trained in its performance.

Thomas E. Carmody, Denver: I want to compliment Dr. Gallaher on his technique, which differs from the Killian. I have tried it once and I appreciate it very much. I feel it is the technique to use. The Killian operation cannot be performed on the free citizens of America, because most of them would not stand for it.

In regard to Dr. Vanderhoof's operations, while there is no chance to add anything, I want to make one criticism, and that is as to the use of dioxygen in these sinuses before opening the nasofrontal duct. I do not believe dioxygen has any place in surgery where we have a small opening. We should have a free opening before we use dioxygen. In all these cases we should wash out with a boric acid or other mild solution, and not use something which will produce gas and cause pressure on the sinus. If the solution is weak it will not cause special trouble, but I have seen serious results from the use of dioxygen. In wounds that are healing, if dioxid of hydrogen is used, if there is free serum or pus present, gas will form and break open the wound, so that Dr. Vanderhoof's point in regard to dioxygen is very well taken.

James J. Pattee, Pueblo: We are, in my opinion, justified in taking a conservative course in some cases. Empty bony cavities, like the sinuses, whose lining membranes are infected with pus, undergo rapid destruction of the membranes unless free constant drainage is established and maintained. If the process is not checked, bony caries of the walls follows.

Recently a surgeon at one of our home hospitals operated on a case from Kansas for brain abscess. The patient died and post-mortem revealed an opening the size of a dime through the frontal roof around which the abscess centered. In cases much less severe than this, and, in fact, in all cases of caries only radical surgical operations will effect a cure. The complicated anatomy, the necessity for thorough work, and the liability to untoward accidents, each contribute to make surgery difficult in this field.

Don A. Vanderhoof, Colorado Springs (closing): The criticism with reference to the use of dioxygen is very well taken. A certain surgeon who was visiting Colorado Springs objected to the use of dioxygen, and I thought at the time the criticism was very well taken.

There are two points I should like to emphasize, first, thorough inspection of the ethmoid labyrinth before resorting to any operative intervention on the frontal sinus; second, that any operative procedure resorted to will not give a satisfactory result without first-class drainage and ventilation.

PUBLIC SCHOOL MEDICAL INSPECTION IN SMALL CITIES.

A Year's Experience In Greeley, Colo.

W. S. DUBOFF, M.D., GREELEY.

The comparatively scant amount of literature on this particular subject is the excuse for the present contribution. Small cities, of eight to ten thousand population, have peculiar problems, different from those in larger centers. The experiences of Greeley may be considered typical.

Greeley is in one of the three states in which school inspection is mandatory. (The others are Massachusetts and New Jersey.) However, the law does not specify that the examinations must be conducted by a physician. In the rural districts and small towns, the work is done more or less efficiently by the teachers. Greeley has employed a regular physician for the last three years.

The problems involved are best considered under three heads:

1. Record-keeping.
2. Routine of inspection.
3. Measures to secure correction of physical defects and prevention of contagion.

1. **Record-keeping.**—in larger communities, the card system is most efficient. Where a corps of men are doing the work for a distinct department, the method evolved here would not of course apply. We have found the card system bulky, inefficient, and expensive. The cards were numerous and continually getting lost. A cross index system was necessary in order to get intelligible and rapid data. The large amount of clerical work had a natural tendency to clash with and obstruct the actual work of inspection and was, as a matter of fact, neglected in favor of the latter. The result is that at the present writing it is impossible to get any data concerning the results obtained for the two years previous to the one under review. And so the present method has been devised in conjunction with Dr. J. K. Miller, the city health physician. It has proven quite satisfactory. It is a loose-leaf note-book system. There is one book for each of the seven schools and one whole page for each individual pupil, designed to

show at a glance the health record of that pupil for the entire twelve years of his public school career. The page is divided into twelve horizontal columns, one for each year. Each column is subdivided into three horizontal divisions, one for each examination. Vertical columns indicate:

Age—Teacher—General Appearance — Eyes
—Ears—Nose—Throat—Teeth—Breath
—Skin—Examiner—Date.

On the reverse side is the "Defective Health Record", used only in the case of physical defectives, with ample room for detailed history, course and remarks. Two thousand children attend the Greeley schools. Five thousand record sheets were printed, and note-book covers made to order (12-in. x 9-in.) at a total cost to the city of twenty-five dollars. This practically covers the cost of stationery for twelve years. When a child is transferred from one school to another, his health record goes with him.

2. The Routine of Inspection. As has been mentioned, three formal examinations are made during the year. During the intervals children are being sent to the examiner by various teachers to be observed for contagion or possible physical defect.

As a rule, the examiner has succeeded in finding a vacant room at each school where he could pursue his work undisturbed—and incidentally preserve class routine. Children are sent in groups of five or six. A rapid, critical glance is bestowed on each child, bearing in mind the possibility of skin eruption, adenoid facies, physical deformity, dyspnea, cyanosis or jaundice. Questions are asked in a low, distinct tone, without looking at the child. This has been found the most practical test for defective hearing. The ordinary watch test has been found unreliable, except in individual instances, and then only as corroborative evidence. The objections to the latter test are that it takes too much time and is so subjective. Vision is tested by the ordinary Snellen card, unsatisfactory as this method is. It serves well enough in simple myopia. But there are cases of astigmatism and even severe grades of hyperopia that wholly escape the notice of the examining physician unless he

takes the history into account—headaches, blepharitis, reflex nervous disturbances, holding school readers at a greater distance than normally during recitations. In this connection, valuable information may be afforded by the teacher. The eyes should be inspected for trachoma or acute conjunctivitis; the ears, for purulent discharge or wax; the mouth, for decayed teeth or pyorrhea; the throat, for enlarged or diseased tonsils.

A purulent conjunctivitis is always contagious and means prompt removal of the affected child from the class. No case of trachoma or its complications has thus far been detected in our schools. The question of enlarged tonsils offers quite a field for difference of opinion.

The writer is guided by the formula that tonsils sufficiently large to give symptoms of respiratory obstruction, and tonsils—whether large, or small and contracted—that are the seat of frequent, severe infections, require surgical interference. Certainly not all big tonsils are pathologic tonsils and a certain amount of discretion should be used in reporting to parents. Among 1,661 pupils examined, 163, or approximately 10 per cent, had tonsils which projected well beyond the pillars into the pharynx but showed no definite indication for treatment. A serviceable classification is that of:

- a. Simple hypertrophied.
- b. Hypertrophied obstructive.
- c. Diseased.

Only the latter two should be reported.

Of these there were 62 cases, or 3.7 per cent.

In the inspection of the mouth the medical examiner can do much for the cause of school inspection by refraining from reporting children with decaying baby teeth. The family dentist is in the habit of telling parents that it is a natural process and that interference is unnecessary. This serves to foster a feeling of scepticism in the lay mind for an institution potent for good, but as yet barely tolerated. The early, six-year molars, however, are permanent teeth, frequently infected and in need of attention.

Approximately twenty-five children can be examined in an hour and the names, addresses, and principal defects recorded. The

rest of the findings may be recorded at any convenient time since they are normal.

The examination of heart and lungs is frankly inefficient. It is not practicable to strip each child to the waist; and placing a stethoscope over clothes is nothing but quackery. No effort was made, therefore, to examine heart and lungs during the routine inspection. Cyanosis, dyspnea or cachexia is the indication for a more complete examination.

A tabulation of defects found in Greeley schools during the past year may be of interest:

Hypertrophied tonsils (with or without adenoids)	62 cases
Defective vision	42 cases
Decayed teeth	18 cases*
Defective hearing	10 cases
Speech defect	4 cases
Kyphosis or other deformity.....	3 cases
Nasal obstruction (other than from adenoids)	3 cases
Enlarged thyroid (not exophthalmic)	2 cases
Chorea	2 cases
Total	146 cases

Thus 8.8 percent of all the school children of Greeley had defects sufficiently marked to require medical attention.

3. Measures to secure correction of physical defects and prevention of contagion. These consist of:

- a. Notification of parents.
- b. Tactful personal discussions with the refractory.
- c. Education of the public in general.
- d. Support of the profession at large.

At the conclusion of the examination in each school, a list of names of pupils requiring medical attention is handed to the principal. The various teachers are asked to fill out notification blanks and send them to the parents. Prompt attention is requested. A reasonable time is allowed for treatment to be instituted and then a report must be made to the teacher. Where parents cannot pay for treatment, it is carried out at county expense. Such provision must be made if medical inspection is to be anything but a matter of form and statistics. Of the 146

pupils found to need attention 89, or 61 per cent, actually received treatment, or are under the observation of the family physician.

Where parents were inattentive or refractory, a personal visit was made by the examiner and a diplomatic conversation often resulted satisfactorily for the cause of medical inspection. It is ordinarily not wise to threaten, but in two or three instances this course has proven successful. The state law requires notification of the Bureau of Child and Animal Protection, and yet no law can compel an individual to submit to a surgical operation such as the removal of tonsils. For this reason more can be accomplished by persuasion than by persecution. Much depends on a proper education of the public, by talks at parents'-teachers' meetings, and even by cautious articles in the newspapers. Parents should be made to realize that this municipal examination is attended with no indignity, that it is not charity, that they are entitled to it in the same way as they are entitled to public instruction. A child who can not see the blackboard can not learn his lesson; nor can a deaf one. The detection of physical defects is an integral and essential part of our modern conception of individual instruction. It is and should therefore be a part of our public school system.

The prompt detection of contagion and isolation are principles easily grasped by parents, and it is not hard to secure their co-operation and to save the community to a large extent from destructive epidemics of disease. It is directly in line with the fundamental principle of latter-day medicine—prophylaxis.

One-fifth of the total population attend the schools of this country. The exanthemata are largely children's diseases. In school inspection, therefore, we have a fertile field for the operation of this principle. It should receive the support of the profession at large. The family physician should cooperate with the school examiner wherever possible. Diagnostic difficulties and differences are bound to arise, particularly with regard to contagion. It is always better to err on the side of safety. Where it is possible to be non-committal and to keep

*The severest cases only, associated with retardation in study.

a child under observation, time will generally clear up the diagnosis without detriment either to the school or to the family physician. In short, the same courtesies should be shown as would maintain in the consultation room. In this way only can the ends of medical inspection of public schools be served and the community be assured of an efficient means of public health protection.

News Notes

The State Board of Medical Examiners recently revoked the license of a physician who some time ago was convicted of illegally dispensing narcotics.

Dr. B. F. O'Daniel, for seventeen years Chief Surgeon of the Missouri Pacific Railroad, and for over eleven years surgeon for The Kansas City Street Railway, died at his home in Denver on October 15th, aged sixty-six years. Dr. O'Daniel was a native of Tennessee, and a graduate of the Louisville Medical College, class of 1874. He had been president of the Tennessee State Medical Association, and later secretary and treasurer of The Missouri State Association. He had resided in Denver for eight years.

Dr. Frank M. McCartney of Denver was married at Littleton on October 17th to Miss Elizabeth M. Mitchell, daughter of Dr. G. W. Mitchell, retired.

The Prowers County Medical Society has elected the following officers for the coming year: President, L. W. Fee of Bristol; vice president, A. C. Davis of Wiley; secretary-treasurer, L. E. Likes of Lamar.

Dr. Alexander Block, who moved to California a few years ago, has resumed practice in Pueblo.

Dr. F. Brownell has opened offices in Fort Collins, where he will limit his practice to eye, ear, nose and throat.

Dr. Wm. Whitridge Williams of Denver recently underwent a throat operation at the Johns Hopkins Hospital in Baltimore.

A Denver district court judge recently issued an order restoring the license to practice of a physician who, after being acquitted by a jury of the charge of murder, had been deprived of his license by the State Board of Examiners on the basis of the same events which had led to the trial in the criminal court.

Dr. Charles A. Ellis of Denver was married in Colorado Springs on October 26th to Mrs. Minerva Cooley Winter, formerly of Mayfield, Kentucky.

Dr. E. R. Coffman, former deputy health commissioner in Denver, has recently been spending some weeks in New York attending the New York Post-graduate Medical School and Hospital.

Dr. O. S. Fowler entertained parties of his friends, numbering twenty-three and twenty-five respectively, at duck dinners on October 20th and November 2nd. It was unanimously voted on both occasions that the Doctor was a great hunter.

Dr. W. A. Jolley is now Chief Surgeon of the National Guard of Colorado. It is interesting to note that the rate of sickness in the military camp near Golden was a good deal below the average among the troops at the Mexican border.

Drs. T. E. Taylor and W. H. Rover have recent-

ly been ill. Dr. Rover's condition is improving rapidly.

The new quarters of the medical meeting hall and library in Denver are rapidly being furnished with the new equipment for which funds were raised some months ago. The formal opening will take place on November 29th.

Dr. C. N. Needham of Grand Junction writes stating that the report that he and his family were leaving that city, which was copied from a local newspaper into the September number of Colorado Medicine, is incorrect.

The Denver Federation for Charity and Philanthropy and the Social Service Bureau announce a lecture course for 1916-1917, at the Denver Public Library on Monday afternoons at four o'clock. Among other social service topics to be discussed, that of "Steps Towards the Solution of Denver's Tuberculosis Problem" was taken up by Livingston Farrand, president of the University of Colorado, on October 23rd.

The report of the Committee on Necrology, presented to the annual meeting of the Colorado State Medical Society in September last and published in the October issue of Colorado Medicine, contained the name of Dr. S. N. Smith of San Luis. Dr. Herriman of Alamosa writes: "I don't see where they got this, as he never was any more alive than at present." The Committee on Necrology will certainly be glad to learn that the statement was erroneous.

We are asked by a member of the late Dr. Asa Harvey's family to give some further information as to the educational career of the deceased physician. Dr. Harvey, who died at Cañon City, Colorado, on July 25th, 1916, aged 63 years, graduated from the Eclectic Medical Institute, Cincinnati, 1875; the American Medical College, St. Louis, 1878; and the Colorado School of Medicine, Boulder, 1894.

Dr. R. W. Corwin, recently returned from work in the French military hospitals, gave a lecture on his European experiences at the Woman's Club in Denver on November 10th.

Thieves who stole an automobile belonging to Dr. I. B. Perkins on November 9th disappeared after colliding with a Santa Fé train on the Colorado & Southern tracks in South Denver. The machine was badly smashed.

Dr. William Halley, previously Colorado Fuel and Iron Company physician at Rouse, has been appointed general assistant to Dr. R. W. Corwin, with supervisory duties throughout the mining camps belonging to the company. The position is a new one. Dr. Halley's former position has been taken by Dr. Paul Carmichael, late of Denver.

At the meeting of the Academy of Ophthalmology and Oto-laryngology in Memphis, Tenn., in December, papers will be read by the following Colorado physicians: Wm. C. Bane, Edward Jackson, I. B. Lockard, and Wm. H. Crisp and W. C. Finnoff (jointly).

Medical Corps of the United States Navy. Legislation has recently been enacted which will provide for approximately 300 additional medical officers in the Medical Corps of the United States Navy. An account of the Navy as a special field for medical work is given by the Surgeon General in a beautifully illustrated pamphlet. Candidates must be under 32 years of age at the time of receiving their commission in the Medical Corps.

A List of Members

of the

Colorado State Medical Society

September 1st, 1916

Name	Postoffice	County	Society	Name	Postoffice	County	Society
Abdun-nur, A. S.	Walsenburg	.....	Huerfano	Black, H. A.	Pueblo	.....	Pueblo
Aberg, A.	San Luis Valley	San Luis Valley		Black, J. A.	Pueblo	.....	Pueblo
Abrahams, H. E.	Trinidad	.....	Las Animas	Black, Melville	Denver	.....	Denver
Adami, J. George	Montreal, Que.	.....	Denver (Hon.)	Blackman, A. A.	Manitou	.....	El Paso
Adams, C. S.	Colo. Springs	.....	El Paso	Blackwood, H. A.	Weldona	.....	Morgan
Adams, Ortus F.	Segundo	.....	Las Animas	Blickensderfer,			
Adams, Wilmer	Denver	.....	Denver	George M.	Denver	.....	Denver
Adams, W. J.	Grand Junction	.....	Mesa	Blotz, B. B.	Rocky Ford	.....	Otero
Adkinson, R. C.	Florence	.....	Fremont	Bolton, L. C.	Cedaredge	.....	Delta
Agan, J. N.	Pierce	.....	Weld	Bonesteel, A. E.	Denver	.....	Denver
Albi, Rudolph	Denver	.....	Denver	Bonney, S. G.	Denver	.....	Denver
Allen, H. W.	Boulder	Boulder (Honorary)		Booth, C. O.	Cheyenne Wells	.....	Unattached
Allen, J. H.	Denver	.....	Denver	Booth, William	Canon City	.....	Fremont
Allen, J. Q.	Montrose	.....	Montrose	Bortree, L. W.	Manitou	.....	El Paso
Allen, L. R.	Colo. Springs	.....	El Paso	Bouslog, J. S.	Boulder	.....	Boulder
Allen, W. P.	Greeley	.....	Weld	Boyd, Elmer T.	Denver	.....	Denver
Amesse, John W.	Denver	.....	Denver	Boyd, G. A.	Manitou	.....	El Paso
Anderson, A.	Ault	.....	Weld	Brandenburg,			
Anderson, B. P.	Colo. Springs	.....	El Paso	Harmon P.	Denver	.....	Denver
Anderson, G. M.	Denver	.....	Denver	Bren, M. R.	Denver	.....	Denver
Andrew, C. F.	Longmont	.....	Boulder	Brethouwer, C. G.	Montrose	.....	Montrose
Andrew, John	Longmont	.....	Boulder	Brewer, E. F.	Aguilar	.....	El Paso
Andrews, G. D.	Walsen	.....	Huerfano	Brinton, W. T.	Cripple Creek	.....	Teller
Apperson, E. L.	Denver	.....	Denver	Broden, J. M.	Lafayette	.....	Boulder
Arbogast, B. A.	Lay	.....	Routt	Broemser, M. A.	Holly	.....	Prowers
Arndt, R. W.	Denver	.....	Denver	Broman, O. F.	Greeley	.....	Weld
Arneill, James R.	Denver	.....	Denver	Bronson, D. A.	Telluride	.....	Montrose
Arnold, C. R.	Colo. Springs	.....	El Paso	Bronson, W. T.	Pueblo	.....	Pueblo
Arnold, W. W.	Colo. Springs	.....	El Paso	Brown, G. E.	Denver	.....	Denver
Atchinson, G. T.	Denver	.....	Denver	Brown, J. H.	Manitou	.....	El Paso
Atkinson, Curtis	Fort Collins	.....	Larimer	Brown, L. G.	Manitou	.....	El Paso
Atwood, DeForest	Denver	.....	Denver	Brown, H. C.	Denver	.....	Denver
Aufmwasser, H. W.	Denver	.....	Denver	Brunk, A. S.	La Junta	.....	Otero
Averill, H. W.	Evans	.....	Weld	Buchtel, F. C.	Denver	.....	Denver
Babcock, M. L.	Sterling	.....	North-East	Buck, W. E.	Pueblo	.....	Pueblo
Bagot, W. S.	Denver	.....	Denver	Bull, H. R.	Grand Junction	.....	Mesa
Baily, M. M.	Loveland	.....	Larimer	Bulette, W. W.	Pueblo	.....	Pueblo
Baird, W. J.	Boulder	.....	Boulder	Bundsens, C. A.	Denver	.....	Denver
Baker, R. C.	Denver	.....	Denver	Burdick, W. T.	Denver	.....	Denver
Baker, W. H.	Pueblo	.....	Pueblo	Burgin, C. H.	Delta	.....	Delta
Baker, W. T. H.	Pueblo	.....	Pueblo	Burket, R. S.	Denver	.....	Denver
Bane, W. C.	Denver	.....	Denver	Burkhard, E.	Delagua	.....	El Paso
Bane, W. M.	Denver	.....	Denver	Burnett, A. L.	Silverton	.....	San Juan
Barney, J. M.	Denver	.....	Denver	Burnett, C. I.	Boulder	.....	Boulder
Barney, N. E.	Sterling	.....	North-East	Burnett, M. A.	Holly	.....	Prowers
Barrett, G. W.	Crook	.....	North-East	Burnett, N. M.	Lamar	.....	Prowers
Bast, Lee	Hotchkiss	.....	Delta	Burnham, N. G.	Denver	.....	Denver
Bates, Mary E.	Denver	.....	Denver	Burns, C. P.	Denver	Denver (Honorary)	
Baum, H. L.	Denver	.....	Denver	Burns, H. R.	Denver	.....	Denver
Beaghtler, A. L.	Denver	.....	Denver	Burns, T. M.	Denver	.....	Denver
Beall, J. T.	Rifle	.....	Garfield	Bush, J. H.	Sterling	.....	North-East
Beall, Kate W.	Denver	.....	Denver	Call, C. H.	Greeley	.....	Weld
Beck, L. H.	Manitou	.....	El Paso	Callahan, T. E.	Saguache	.....	San Luis Valley
Beck, N. C.	Denver	.....	Denver	Calkins, H. A.	Leadville	.....	Lake
Beers, Ida V.	Denver	.....	Denver	Campbell, A. J.	Denver	.....	Denver
Beggs, W. N.	Denver	.....	Denver	Campbell, L. D.	Denver	.....	Denver
Bell, S. H.	Montrose	.....	Montrose	Campbell, J.	Boulder	.....	Boulder
Belrose, W. W.	Eaton	.....	Weld	Campbell, W. H.	Pueblo	.....	Pueblo
Bender, A. J.	Salida	.....	Lake	Canby, H. S.	Denver	.....	Denver
Bennett, E. O.	Boulder	.....	Boulder	Carmony, T. E.	Denver	.....	Denver
Bennett, H. M.	Boulder	.....	Boulder	Carrier, F. N.	Santa Rita, N. M.	.....	Fremont
Berlin, W. C. K.	Denver	.....	Denver	Case, Austin G.	Denver	.....	Denver
Beshoar, Ben.	Trinidad	.....	Las Animas	Casely, W. N.	Colorado Springs	.....	El Paso
Bigelow, May T.	Denver	.....	Denver	Cattermole, G. H.	Boulder	.....	Boulder
Biles, J. A.	Del Norte	.....	San Luis Valley	Cavey, J. E.	Stratton	.....	Unattached
Birkenmeyer, W. C.	Denver	.....	Denver	Chamberlain, F. C.	Colorado Springs	.....	El Paso
Bixler, C. W.	Erie	.....	Boulder	Champlin, H. H.	Denver	.....	Denver

Chandler, G. B....	Calhan	El Paso
Chapman, W. S....	Walsenburg	Huerfano
Charles, R. L....	Denver	Denver
Chase, John....	Denver	Denver
Chase, P. M....	Denver	Denver
Chesmore, H. P....	Colorado Springs.....	El Paso
Childs, S. B....	Denver	Denver
Chipman, J. C....	Sterling	North-East
Chisholm, A. J....	Trinidad	Las Animas
Christopher, D. I....	Colorado Springs.....	El Paso
Church, W. F....	Greeley	Weld
Clark, L. G....	Glenwood Springs.....	Garfield
Clarke, E. A....	Stratton	Unattached
Cleland, W. S....	Delta	Delta
Cochems, F. N....	Salida	Lake
Coffman, F. R....	Denver	Denver
Cohen, H. M....	Denver	Denver
Cole, F. E....	Denver	Denver
Coleman, Oscar E....	Henderson	Denver
Collins, E. W....	Denver	Denver
Collins, Moses....	Denver	Denver
Collins, P. P....	Grand Junction	Mesa
Conant, E. F....	Denver	Denver
Condon, Charles E....	Breckenridge	Lake
Cook, D. M....	Julesburg	North-East
Cooke, J. M....	Colorado Springs	El Paso
Cooper, C. E....	Denver	Denver
Cooper, H. S....	Durango	San Juan
Coover, D. H....	Denver	Denver
Corlett, T. G....	Colorado Springs.....	El Paso
Corwin, R. W....	Pueblo	Pueblo
Covell, W. W....	Blanca	San Luis Valley
Craghead, W. S....	Denver	Denver
Craig, Alex. C....	Denver	Denver
Craig, A. R....	Mesa	Mesa
Craig, Helen F....	Denver	Denver
Craig, W. B....	Denver	Denver
Craighead, J. W....	Denver	Denver
Crawford, E. A....	Hudson	Weld
Crawley, Z. T....	Monte Vista....	San Luis Valley
Creighton, B. B....	Manitou	El Paso
Crews, George B....	Denver	Denver
Crisp, J. D....	Denver	Denver
Crisp, W. H....	Denver	Denver
Crook, W. W....	Glenwood Springs.....	Garfield
Crosby, L. G....	Denver	Denver
Crouch, J. B....	Woodmen	El Paso
Cummings, G. D....	Florence	Fremont
Cunningham, Alex. A....	Denver	Denver
Curfman, G. H....	Salida	Lake
Currgan, M. D....	Denver	Denver
Curry, E. M....	Hastings	Las Animas
Curtis, H. B....	Denver	Denver
Dahl, W. Z....	Reno, Nev.	Lake
Dake, Walter M....	Hot Springs, Ark.....	Denver
Dale, J. E....	Fort Collins	Larimer
Dalley, H. H....	Walsenburg	Huerfano
Danahey, T. J....	Denver	Denver
Daniel, J. H....	Iliff	North-East
Darling, J. C....	Antonito	San Luis Valley
Davlin, C. A....	Alamosa	San Luis Valley
Davis, A. C....	Wiley	Prowers
Davis, John B....	Denver	Denver
Davis, J. W....	Aguilar	Las Animas
Davis, T. A....	Portland	Fremont
Davis, W. H....	Denver	Denver
Dawson, J. K....	Sterling	North-East
Day, H. S....	Grand Junction.....	Mesa
Dean, Edward F....	Denver	Denver
De Beque, Wallace, A. E....	De Beque.....	Denver
Delehanty, E. S....	Denver	Denver
Denney, R. H....	Elbert	Denver
Dennis, F. L....	Colorado Springs.....	El Paso
Depeyre, L. N....	Colorado Springs.....	El Paso
De Sobe, Jos. O....	Denver	Denver
Didrickson, F. G....	Montrose	Montrose
Dixon, Fred L....	Denver	Denver
Dodge, H. C....	Steamboat Springs.....	Routt
Dodge, H. O....	Boulder....	Boulder (Honorary)
Dorset, B. C....	Denver	Denver
Douglass, A. L....	Denver	Denver
Downs, J. E....	Craig	Denver
Drechsler, W....	Denver	Denver
Drinkwater, R. L....	Denver	Denver
Drisdale, W. E....	Grey Creek.....	Las Animas
Drown, L. M....	Denver	Denver
Duboff, W. S....	Greeley	Weld
Dunlop, J....	Pueblo	Pueblo
Dunkel, R. C....	Cokedale	Las Animas
Dunwoody, John A....	Cripple Creek.....	Teller
Durnell, Albert....	Strong	Huerfano
Dyde, Chas. B....	Greeley	Weld
Dymenberg, Noah....	Denver	Denver
Eakins, C. F....	Brush	Morgan
Early, A. H....	Denver	Denver
Edson, C. E....	Denver	Denver
Edwards, E. G....	La Junta.....	Otero
Edwards, G. M....	Denver	Denver
Eichberg, S. B....	Denver	Denver
Eigler, Chas. O....	Denver	Denver
Elder, Chas. S....	Denver	Denver
Elder, E. A....	Pueblo	Pueblo
Elliott, C. E....	Victor	Teller
Elliott, H. R....	Denver	Denver
Ellis, Chas. A....	Denver	Denver
Elsner, John....	Denver	Denver (Honorary)
Engelson, C. J....	Brookings	Denver
Epler, Crum....	Pueblo	Pueblo
Erich, A. F....	Paonia	Delta
Espey, J. G....	Trinidad	Las Animas
Espey, J. R....	Trinidad	Las Animas
Evans, L. P....	Fort Morgan.....	Morgan
Evans, E. E....	Victor	Teller
Faith, A. H....	Parshall	Denver
Fantz, T. S....	Denver	Denver
Farrand, L....	Boulder	Boulder (Honorary)
Farrington, F. H....	Boulder	Boulder
Fee, L. W....	Bristol	Prowers
Ferguson, J. H....	Colorado Springs.....	El Paso
Ferris, Chas. A....	Denver	Denver
Fezer, Florence....	Fort Collins.....	Larimer
Field, A. D....	Granada	Prowers
Filmer, B. A....	Colorado Springs.....	El Paso
Finney, Frank....	La Junta.....	Otero
Finney, Harry S....	Denver	Denver
Finney, R. H....	Pueblo	Pueblo
Finnoff, W. C....	Denver	Denver
Fischer, V. B....	Boulder	Boulder
Fisher, Carl D....	Denver	Denver
Foley, John W....	Denver	Denver
Ford, D. E....	Weymouth, Mass....	Las Animas
Forhan, T. J....	Sopris	Las Animas
Forster, A. M....	Colorado Springs.....	El Paso
Foster, John M....	Denver	Denver
Fowler, H. L....	Denver	Denver
Fowler, O. S....	Denver	Denver
Fox, M. R....	Sterling	North-East
Frank, L. W....	Denver	Denver
Frank, W. W....	Glenwood Springs.....	Garfield
Fraser, M. E. V....	Denver	Denver
Freeman, L....	Denver	Denver
French, Samuel....	Meeker	Garfield
Freudenthal, A....	Trinidad	Las Animas
Friedman, E....	Denver	Denver
Friend, F. Milton....	Lamar	Prowers
Frosh, Henry B....	Denver	Denver
Fugard, A. L....	Pueblo	Pueblo
Gale, M. Jean....	Denver	Denver
Gallaher, Thos. J....	Denver	Denver
Gardiner, C. F....	Colorado Springs.....	El Paso

Garvin, Daniel E.	Golden	Denver
Garwood, H. G.	Denver	Denver
Gelien, Johanna	Denver	Denver
Gengenbach, F. P.	Denver	Denver
Gibson, J. D.	Denver	Denver
Giese, C. O.	Colorado Springs	El Paso
Giffin, Clay E.	Boulder	Boulder
Giffin, L. M.	Boulder	Boulder
Gilbert, G. B.	Colorado Springs	El Paso
Gilbert, O. M.	Boulder	Boulder
Gillaspie, C.	Boulder	Boulder
Gillett, O. R.	Colorado Springs	El Paso
Gilmore, G. B.	Colorado Springs	El Paso
Gleason, R. L.	Wellington	Larimer
Goldhammer, S.	Englewood	Denver
Good, Albert H.	Pitkin	Montrose
Goodloe, Hart	Canon City	Fremont
Goodson, H. C.	Woodmen	El Paso
Gotthelf, I. L.	Saguache	San Luis Valley
Graham, C. A.	Denver	Denver
Graham, E. V.	Breckenridge	Lake
Graham, R. F.	Greeley	Weld
Grant, W. W.	Denver	Denver
Grantham, O. A.	Johnstown	Weld
Graves, C. H.	Canon City	Fremont
Green, J. L.	Eagle	Garfield
Greene, H. A.	Boulder	Boulder
Greig, William	Sterling	North-East
Grieger, Hubert	Englewood	Denver
Griffith, B. F.	Leadville	Lake
Grover, B. B.	Colorado Springs	El Paso
Groves, D. C.	Olathe	Montrose
Guthrie, E. C.	Denver	Denver
Guthrie, J. F.	Vineland	Pueblo
Hadley, Edgar	Montrose	Montrose
Hadley, W. A.	Eagle	Garfield
Hall, A. Z.	Lafayette	Boulder
Hall, H. E.	La Junta	Otero
Hall, Josiah N.	Denver	Denver
Halley, S. C.	Fort Collins	Larimer
Halley, William	Rouse	Huerfano
Ham, Judson B.	Denver	Denver
Hamilton, D. D.	Howard	Fremont
Hanford, P. O.	Colorado Springs	El Paso
Hanson, Knude	Grand Junction	Mesa
Harlow, W. P.	Boulder	Boulder
Harmer, W. W.	Greeley	Weld
Harriman, L. L.	Alamosa	San Luis Valley
Harrington, R. B.	Grand Junction	Mesa
Harris, Allen H.	Denver	Denver
Harrison, Fleet H.	Fraser	Denver
Hart, J. A.	Geneva, N. Y.	El Paso
Harvey, H. G.	Denver	Denver
Hassenplug, G. K.	Denver	Denver
Hassenplug, W. F.	Cripple Creek	Teller
Hausman, J. L.	Marysville, Kan.	Denver
Hawkins, T. H.	Indiana	Denver (Honorary)
Haxlett, H. W.	Paonia	Delta
Hayes, Oscar	Denver	Denver
Healy, M. D.	Denver	Denver
Heath, Horace	Denver	Denver
Hegner, C. F.	Denver	Denver
Heller, F. M.	Pueblo	Pueblo
Heller, P. H.	Pueblo	Pueblo
Henderson, H. S.	Grand Junction	Mesa
Henkel, F. W. E.	Durango	San Juan
Hepler, A. H.	New Castle	Garfield
Hepp, G. B.	Denver	Denver
Hereford, J. H.	Cripple Creek	Teller
Hersom, R. G.	Cheraw	Otero
Hess, W. L.	Denver	Denver
Hick, L. A.	Delta	Delta
Hickey, C. G.	Denver	Denver
Higgins, J. W.	Denver	Denver
Hill, Edward C.	Denver	Denver
Hillkowitz, P.	Denver	Denver
Hinshaw, J. D.	Westcliffe	Fremont
Hoag, D. E.	Pueblo	Pueblo
Hoagland, H. W.	Colorado Springs	El Paso
Hoel, G. L.	Fort Collins	Larimer
Holden, G. W.	Denver	Denver
Holmes, K. W.	Minturn	Lake
Holmes, R. E.	Canon City	Fremont
Hopkins, J. A.	Glenwood Springs	Garfield
Hopkins, J. R.	Denver	Denver
Horan, J. E.	Glenwood Springs	Garfield
Horn, Andrew J.	Denver	Denver
Horton, D. J.	La Salle	Weld
Howard, Charles	Victor	Teller
Howard, J. F.	Pueblo	Teller
Howard, T. L.	Denver	Denver
Howell, Thos. F.	Creede	San Luis Valley
Hubbard, A. P.	Grand Junction	Mesa
Hudston, Ranulph	Denver	Denver
Hughes, J. G.	Greeley	Weld
Hughes, Tandy A.	Denver	Denver
Hunnicut, W. P.	Pueblo	Pueblo
Hunter, Paul S.	Denver	Denver
Hutton, V. A.	Florence	Fremont
Inglis, John	Denver	Denver
Ingraham, C. B.	Denver	Denver
Irwin, Robt. S.	Denver	Denver
Jackson, Edward	Denver	Denver
Jackson, F. A.	Salida	Larimer
Jaeger, Chas.	Denver	Denver
James, T. L.	Colorado Springs	El Paso
Jayne, W. A.	Denver	Denver
Jeanotte, J. A.	Leadville	Lake
Jeffery, J. E.	Ordway	Crowley
Joffee, William	Chicago, Ill.	Denver
John, Grant H.	Denver	Denver
Johnson, J. E.	Denver	Denver
Johnson, R. W.	Olney Springs	Crowley
Johnston, R. S.	La Junta	Otero
Johnston, W. S.	Pueblo	Pueblo
Jolley, W. A.	Boulder	Boulder
Jones, B. F.	Goldfield	Teller
Jones, R. E.	Fort Morgan	Denver
Jones, S. F.	Denver	Denver
Jones, W. W.	Denver	Denver
Joslyn, S. A.	Loveland	Larimer
Kahn, Sol G.	Salt Lake City	Lake
Kelley, T. P.	Golden	Denver
Keeney, M. J.	Pueblo	Pueblo
Kenney, F. W.	Denver	Denver
Kennedy, A. L.	Denver	Denver
Kennedy, G. A.	Limon	Denver
Kickland, W. A.	Fort Collins	Larimer
Killough, H. B.	Pueblo	Pueblo
King, A. T.	Pueblo	Pueblo
King, W. W.	Cripple Creek	Teller
Kinney, Julius E.	Denver	Denver
Kleiner, Moses	Denver	Denver
Knoch, N. H.	Denver	Denver
Knott, A. W.	Montrose	Montrose
Knott, Isaiah	Montrose	Montrose
Knowles, E. W.	Greeley	Weld
Knowles, T. R.	Colorado Springs	El Paso
Knucky, C. F.	Lamar	Prowers
Krohn, H. N.	Denver	Denver
Krohn, M. J.	Denver	Denver
Kruse, May B.	Denver	Denver
Kunitomo, N.	Denver	Denver
Lake, Alice	Boulder	Boulder
Lahmer, Ira B.	Walsenburg	Huerfano
Lamberton, R. F.	Denver	Denver
La Moure, H. A.	Pueblo	Pueblo
Lansdale, Phil. S.	Longmont	Boulder
Larimer, G. W.	Salida	Lake
La Rue, C. L.	Boulder	Boulder
Lassen, Fritz	Pueblo	Pueblo
Latta, C. J.	Haxtum	North-East

Law, G.....	Greeley	Weld
Lawney, Eleanor	Denver	Denver (Honorary)
Lawson, J. A....	Rocky Ford	Otero
Lazell, E. W....	Denver	Denver
Leavitt, B. C....	Millbrook, Mass.	Denver
Lee, George H....	Denver	Denver
Lee, H. C....	Trinidad	Las Animas
Lehan, J. W....	Greeley	Weld
Lemen, Lewis E..	Denver	Denver
Lennox, P. A....	Colorado Springs	El Paso
Le Rossignol,		
W. J.....	Rifle	Garfield
Levy, Robert....	Denver	Denver
Lewis, W. H....	Hotchkiss	Delta
Leyda, Paul....	Lafayette	Boulder
Libby, George F..	Denver	Denver
Likes, L. E....	Lamar	Prowers
Lincoln, C. L....	Denver	Denver
Lindahl, John....	Denver	Denver
Lindsay, Kate...	Boulder	Boulder
Lingenfelter,		
George P.....	Denver	Denver
Little, W. T....	Canon City	Fremont
Lockard, L. B....	Denver	Denver
Lockard, W. G....	New Castle	Garfield
Lockridge, A. B..	Pueblo	Pueblo
Lockwood, C. E..	Olathe	Montrose
Lockwood, F. W..	Fort Morgan	Morgan
Löf, Anders J. O.	Denver	Denver
Long, Margaret..	Denver	Denver
Long, T. F....		
Loomis, P. A....	Colorado Springs	El Paso
Lord, H. A....	Pueblo	Pueblo
Lorimer, Hugh F.	Ordway	Crowley
Love, M. C. T....	Denver	Denver
Love, Tracy R....	Denver	Denver
Low, H. T....	Pueblo	Pueblo
Lowen, Chas. J..	Denver	Denver
Lucas, Wilbur....	Pueblo	Pueblo
Lyman, Chas. B..	Denver	Denver
Lyons, Oliver....	Denver	Denver
MacLean, Luke...	Pueblo	Pueblo
Macomber, G. M..	Denver	Denver
Madden, J. H....	Colorado Springs	El Paso
Maddox, W. D....	Denver	Denver
Magruder, A. C..	Colorado Springs	El Paso
Mahoney, J. J....	Colorado Springs	El Paso
Maier, F. W....	Rocky Ford	Otero
Mann, Alfred....	Denver	Denver
Mann, H. A....	Colorado Springs	El Paso
Manns, Rudolph.	Denver	Denver
Marbourg, E. M..	Colorado Springs	El Paso
Markley, A. J....	Denver	Denver
Marmaduke, C. V..	Pueblo	Pueblo
Martin, H. H....	Denver	Denver
Martin, W. F....	Colorado Springs	El Paso
Mathews, P. G....	Walsenburg	Huerfano
Matlock, J. A....	Longmont	Boulder
Matthews, B. H..	Denver	Denver
Mayhew, D. P....	Colorado Springs	El Paso
Maynard, C. W....	Pueblo	Pueblo
Maxwell, J. G....	Canon City	El Paso
McCartney, F. M.	Denver	Denver
McCaw, John A..	Denver	Denver
McClanahan,		
Z. H.....	Colorado Springs	El Paso
McClary, T. O....	Ordway	Crowley
McClure, C. O....	Starkville	Las Animas
McConnell, J. F..	Colorado Springs	El Paso
McCorkle, H. B..	Colorado Springs	El Paso
McDonald, A. J..	Leadville	Lake
McDonald, R. J..	Leadville	Lake
McDonnell, J. J..	Pueblo	Pueblo
McEachern, C. J.	Denver	Denver
McFadden, J. G..	Loveland	Larimer
McFarland, S. B.	Longmont	Boulder
McGee, Rea P....	Denver	Denver
McGillivray, J. C.	Denver	Denver
McGraw, H. R....	Denver	Denver
McGugan, Arthur	Denver	Denver
McHugh, P. J....	Fort Collins	Larimer
McIntyre, T. A..	Cripple Creek	Teller
McIsaac, T. C....	Guernsey, Wyo.	Routt
McKay, J. H....	Denver	Denver
McKeeby, F. E....	Olney Springs	Crowley
McKeen, H. R....	Denver	Denver
McKelvey, S. R..	Denver	Denver
McKenney, G. P..	Denver	Denver
McKenzie, C. D..	Denver	Denver
McKeown, E. E....	Denver	Denver
McKlveen, F. G..	Denver	Denver
McKibben, S....	Creede	San Luis Valley
McKinney, G. P..	Denver	Denver
McKinnie, L. H..	Colorado Springs	El Paso
McLaughlin, C. A.	Denver	Denver
McLaughlin,		
H. W.....	Denver	Denver
McLean, A. M....	Leadville	Lake
McNaught, F. H..	Denver	Denver
Mead, Ella A....	Greeley	Greeley
Meador, Chas. N.	Denver	Denver
Menkel, Herman.	Simla, India	Denver
Meredith, H. H..	Montrose	Montrose
Merrill, C. W....	Burlington	Unattached
Meyers, J. F....	Hotchkiss	Delta
Middlekamp,		
M. S.....	Pueblo	Pueblo
Miel, George W..	Denver	Denver
Mierley, Ira C...	Denver	Denver
Miles, Amy....	Boulder	Boulder
Miles, M. E....	Boulder	Boulder
Miller, A. E....	Delta	Delta
Miller, H. C....	Del Norte	San Luis Valley
Miller, L. A....	Colorado City	El Paso
Miller, S. W....	Denver	Denver
Minnig, Arnold...	Golden	Denver
Mitchell, D. M....	Grover	Weld
Mitchell, W. C..	Denver	Denver
Moleen, G. A....	Denver	Denver
Monaghan, D. G..	Denver	Denver
Monismith, A. F.	Fort Lupton	Weld
Moninger, J. H..	Monte Vista	San Luis Valley
Monson, G. L....	Denver	Denver
Moore, A. M....	Denver	Denver
Moore, Edward...	Colorado Springs	El Paso
Moore, F. R....	Florence	Fremont
Moore, W. M....	La Junta	Otero
Morning, J. F....	Denver	Denver
Morris, C. E....	Alamosa	San Luis Valley
Morris, R. E....	Minnesota	Boulder
Morrison, C. S..	Colorado City	El Paso
Morrow, E. L....	Oak Creek	Routt
Mortimer, J. L..	Denver	Denver
Moses, H. C....	Colorado Springs	El Paso
Mullin, W. V....	Colorado Springs	El Paso
Mumma, E. L....	Boulder	Boulder
Murray, Ed. J....	Alamosa	San Luis Valley
Naugle, J. E....	Sterling	North-East
Nossaman, A. J..	Pagosa Springs	San Luis Valley
Needham, C. N...	Grand Junction	Mesa
Needles, J. W....	Pueblo	Pueblo
Neeper, E. R....	Colorado Springs	El Paso
Nelson, G. E....	Windsor	Weld
Neuhaus, G. E....	Denver	Denver
Nicoletti, F. A..	Pueblo	Pueblo
Noble, Mary R....	Colorado Springs	El Paso
Noonan, G. M....	Chandler	Fremont
Norton, D. O....	Fort Collins	Larimer
O'Connor, J. W...	Denver	Denver
Ogle, W. M....	Bowen	Las Animas
Ogilbee, H. M....	Colorado City	El Paso
O'Halloran, R. C.	Silverton	San Juan

Olmstead, G. K.	Denver	Denver
Olson, D. G.	Keota	Weld
Oppenheim, S. M.	Denver	Denver
Oram, O. A.	Crested Butte	Boulder
Orendorff, Otis	Canon City	El Paso
Orsborn, G. E.	Denver	Denver
Osborne, C. K.	Como	Lake
Packard, G. B.	Denver	Denver
Packard, R. G.	Denver	Denver
Packard, W. A.	Fort Morgan	Morgan
Palmer, H. R.	Grand Junction	Mesa
Palmer, W. A.	Castle Rock	Denver
Passover, Lucy	Denver	Denver
Pattee, J. J.	Pueblo	Pueblo
Patterson, J. A.	Colorado Springs	El Paso
Patterson, W. O.	Pueblo	Pueblo
Peairs, J. E.	Pueblo	Pueblo
Peck, Grant S.	Denver	Denver
Peebles, A. R.	Boulder	Boulder
Peirce, F. J.	Pueblo	Pueblo
Pennock, V. R.	Longmont	Boulder
Perkins, C. C.	Denver	Denver
Perkins, Isaac B.	Denver	Denver
Perkins, J. M.	Denver	Denver
Pershing, C. L.	Denver	Denver
Pershing, H. T.	Denver	Denver
Peter, A. H.	Colorado Springs	El Paso
Philpott, J. A.	Denver	Denver
Place, Olney G.	De Beque	Denver
Plumb, C. W.	Grand Junction	Mesa
Pogue, G. R.	Greeley	Weld
Poley, C. W.	Boulder	Boulder
Pollock, A. R.	Monte Vista	San Luis Valley
Pollock, C. R.	Rocky Ford	Otero
Pollock, R. M.	Rocky Ford	Otero
Porter, H. K.	Delta	Delta
Porter, R. B.	Fruita	Mesa
Pothuisje, P. J.	Denver	Denver
Powell, Cuthbert	Denver	Denver
Powers, Chas. A.	Denver	Denver
Pratt, Elsie S.	Ann Arbor, Mich.	Denver
Presnall, C. W.	Denver	Denver
Preston, M. E.	Denver	Denver
Prewitt, F. E.	Denver	Denver
Purcell, J. W.	Denver	Denver
Queal, E. B.	Boulder	Boulder
Ragsdale, E. W.	La Junta	Otero
Ramaley, Francis	Boulder	Boulder (Honorary)
Ramsey, R. T.	Denver	Denver
Reed, C. W.	Grand Junction	Mesa
Reed, D. W.	Greeley	Weld
Reed, W. W.	Boulder	Boulder
Replogle, B. F.	Fort Collins	Larimer
Rew, A. W.	Fort Collins	Larimer
Rice, D. H.	Colorado Springs	El Paso
Rich, W. F.	Pueblo	Pueblo
Richie, L. T.	Trinidad	Las Animas
Richmond, C. E.	Colorado Springs	El Paso
Riddle, J. P.	Glenwood Springs	Garfield
Ringle, C. A.	Greeley	Weld
Robb, W. J.	Silverton	San Juan
Robbins, A. W.	Durango	San Juan
Robe, R. C.	Pueblo	Pueblo
Roberts, J. O.	Denver	Denver
Roberts, J. P.	Palisade	Mesa
Robertson, E. H.	Boulder	Boulder
Robinson, G. W.	Trinidad	Las Animas
Robinson, J. R.	Colorado Springs	El Paso
Roe, John F.	Denver	Denver
Roehrig, G. F.	Denver	Denver
Roehrig, K. F.	Denver	Denver
Roger, E. J. A.	Denver	Denver
Rogers, F. E.	Denver	Denver
Rooks, Chas.	Julesburg	North-East
Root, Matt R.	Denver	Denver
Rothrock, F. B.	Colorado Springs	El Paso
Rothwell, E. J.	Denver	Denver (Honorary)
Rothwell, P. D.	Denver	Denver
Rothwell, W. J.	Denver	Denver
Rover, Henry W.	Denver	Denver
Ruegnitz, L. H.	Denver	Denver
Rupert, L. E.	Florence	Fremont
Russell, E. M.	Berwind	Las Animas
Russell, Richard	Westminster	Denver
Rutledge, J. A.	Woodmen	El Paso
Sadler, E. L.	Fort Collins	Larimer
Scannell, E. J.	Trinidad	Las Animas
Schaefer, S. W.	Colorado Springs	El Paso
Scherer, E. A.	Denver	Denver
Schermerhorn, F.	Montrose	Montrose
Schneider, E. C.	Colorado Springs	El Paso
Schoen, W. A.	Victor	Teller
Schofield, J. R.	Fort Collins	Larimer
Schofield, J. V.	Colorado Springs	El Paso
Schwer, John	Pueblo	Pueblo
Scott, A. R.	Berthoud	Larimer
Scott, Ira D.	Boulder	Boulder (Honorary)
Sedwick, W. A.	Denver	Denver
Seebass, A. R.	Denver	Denver
Senger, William	Pueblo	Pueblo
Sewall, Henry	Denver	Denver
Shafer, H. S.	Denver	Denver
Shapiro, J. M.	Denver	Denver
Sharp, G. L.	Colorado Springs	El Paso
Sharpley, W. H.	Denver	Denver
Shea, Robert M.	Denver	Denver
Sheller, W. O.	Lamar	Prowers
Shelton, E. K.	Antonito	San Luis Valley
Shere, Oscar M.	Denver	Denver
Sherman, E. M.	Holly	Prowers
Shields, J. M.	Grand Junction	Mesa
Shippey, O. P.	Saguache	San Luis Valley
Shivers, M. O.	Colorado Springs	El Paso
Shollenberger,		
Charles F.	Denver	Denver
Shotwell, W. E.	Denver	Denver
Shultz, W. M.	Saint Elmo	Fremont
Sickenberger,		
J. U.	Grand Junction	Mesa
Simon, Saling	Denver	Denver
Simpson, A. J.	Denver	Denver
Singer, W. F.	Pueblo	Pueblo
Skinner, M. G.	Washington, D. C.	Denver
Smiley, Henry C.	Ridge	Denver
Smith, Albert E.	Rifle	Denver
Smith, C. K.	Alamosa	San Luis Valley
Smith, H. A.	Delta	Delta
Smith, R. G.	Denver	Denver
Smits, J.	Leadville	Lake
Snair, Walter L.	Louisville	Boulder
Snedec, J. F.	Pueblo	Pueblo
Solandt, J. V.	Hayden	Routt
Solenberger,		
A. R.	Colorado Springs	El Paso
Spangelberger,		
M. A.	Denver	Denver
Spaulding, W. F.	Greeley	Weld
Spencer, F. R.	Boulder	Boulder
Spicer, O. W.	Colorado Springs	El Paso
Spitzer, W. M.	Denver	Denver
Spivak, Chas. D.	Denver	Denver
Stahl, A. H.	Denver	Denver
Stanley, A. F.	Pryor	Huerfano
Staunton, A. G.	Denver	Denver
Steinberg, B. M.	Pueblo	Pueblo
Steiner, J. M.	Denver	Denver
Stephenson, F. B.	Marble	Denver
Stevens, F. T.	Colorado Springs	El Paso
Stevens, H. L.	Denver	Denver
Stewart, J. R.	Colorado Springs	El Paso
Stiffler, M. L.	Denver	Denver
Stillwill, H. P.	Denver	Denver
Stoddard, T. A.	Pueblo	Pueblo
Stough, C. F.	Colorado Springs	El Paso

Stratton, M. R....Denver Denver
 Strickler, D. A....Denver Denver
 Strong, J. C....Leadville Lake
 Stuart, J. R....Colorado Springs.....El Paso
 Stubbs, A. L....La Junta Otero
 Stubbs, J. L....La Junta Otero
 Stuver, E....Fort Collins Larimer
 Sunderland,
 W. E....Denver Denver
 Sutarius, F. A....Florence Fremont
 Swan, W. H....Colorado Springs.....El Paso
 Swartz, Fred G....Nederland Boulder
 Sverdfeger, E....Denver Denver
 Tadlock, J. L....Palisade Mesa
 Taussig, A. S....Denver Denver
 Taylor, A. G....Grand Junction..... Mesa
 Taylor, C. F....Pueblo Pueblo
 Taylor, H. L....Denver Denver
 Taylor, R. R....Pueblo Pueblo
 Taylor, T. C....Fort Collins Larimer
 Taylor, T. E....Denver Denver
 Tennant, C. E....Denver Denver
 Thomas, H. C....Victor Teller
 Thompson, C. W....Pueblo Pueblo
 Thompson, D....Denver Denver
 Thompson, D. C. Trinidad Las Animas
 Thompson, H. M. Pueblo Pueblo
 Thompson, N. A. Denver Denver
 Thompson, W. E. Greeley Weld
 Timmons, E. L....Colorado Springs.....El Paso
 Todd, James C....Boulder Boulder
 Tower, F. A....Denver Denver
 Triplett, T. A....Denver Denver
 Trossbach, H....Colorado Springs.....El Paso
 Trout, A. L....Walsenburg Huerfano
 Trovillion, E. B. Boulder Boulder
 Trueblood, C....Monte Vista....San Luis Valley
 Tubbs, W. R....Carbondale Garfield
 Tucker, Beverly. Colorado Springs.....El Paso
 Turner, W. E....Brush Morgan
 Tygart, C. A....Denver Denver
 Vanderhoof, D. A. Colorado Springs.....El Paso
 Vander Schow,
 G. E....Fowler Otero
 Van Meter, L. M. Denver Denver
 Van Meter, S. D. Denver Denver
 Van Zant, C. B. Denver Denver
 Vinyard, G. S....Colorado City.....El Paso
 Vogt, H. J....Pueblo Pueblo
 Von der Smith, P. Denver Denver
 Vroom, J. N....Denver Denver
 Wade, Pitt A....Cañon City Fremont
 Waefel, C. F....Louisville Boulder
 Walker, A. G....Superior Boulder
 Walker, C. E....Denver Denver
 Walker, R. G....Denver Denver
 Wallace, F. E....Pueblo Pueblo
 Wallace, G. C....Denver Denver
 Wallace, J. F....Woodmen El Paso
 Waring, J. J....Denver Denver
 Warner, G. R....Grand Junction..... Mesa
 Wasson, W. W....Boulder Boulder
 Watson, W. V....Plateau City Mesa
 Watt, H. C....Colorado Springs.....El Paso
 Webb, E. C....Cañon City.....El Paso
 Webb, G. B....Colorado Springs.....El Paso
 Weber, Fred....Boulder Boulder
 Weldon, L. J....Denver Denver
 Wescott, O. D....Denver Denver
 Wetherill, H....Denver Denver
 Whitaker, D. L....Mount Harris Routt
 White, H. T....Avondale Pueblo
 White, H. W....Fruita Mesa
 White, W. W....Longmont Boulder
 Whitmore, E. A. Leadville Lake
 Whitney, H. B....Denver Denver
 Wilcox, H. W....Denver Denver

Williams, A. F....Fort Morgan..... Morgan
 Williams, A. H....Denver Denver
 Williams, S....Denver Denver
 Williams, W. W. Denver Denver
 Wilkin, C. F....La Porte Larimer
 Wilkinson, C. H. Cañon City El Paso
 Wilkinson, W. M. Denver Denver
 Wilson, M. O....Fort Morgan..... Morgau
 Wilson, R. D....Holly Prowers
 Winston, A. L....Colorado Springs.....El Paso
 Witter, Roy V....Elizabeth Denver
 Wollenweber,
 Louis C....Denver Denver
 Woodbridge, J. H. Pueblo Pueblo
 Woodcock, B....Greeley Weld
 Woodhull, A. A. Princeton, N. J....Denver (Hon.)
 Wood, W. H....Greeley Weld
 Woods, W. P....Forbes..... Las Animas
 Work, Hubert....Pueblo Pueblo
 Work, Philip....Pueblo Pueblo
 Workman, C. W. Sugar City..... Crowley
 Workman, J. C. Ordway Crowley
 Worthington,
 Andrew K....Denver Denver
 Yont, Kate G....Denver Denver
 Zinke, William....Colbran Mesa
 Zederbaum, A....Denver Denver

Medical Societies

BOULDER COUNTY.

The Boulder County Medical Society met in regular session in the banquet room of the Physicians' Building at 6:30 o'clock, November 2, 1916. Dinner was served to the twenty members present.

Meeting called to order by the president, Dr. C. T. Burnett. Regular business meeting. The bill to be voted on at the general election concerning higher requirements for those practicing the "Healing Art" in the state of Colorado, was discussed in considerable detail. Motion was made and carried after considerable discussion that the sentiment of this Society is that it is decidedly to the best interest of the people of the state to have this bill passed. A second motion was made and carried that the president of this Society be instructed to publish in the local newspapers the sentiment of this Society concerning the passage of said bill. It was suggested that the Program Committee have a joint meeting or entertain the Boulder Bar Association, and later a motion was made and carried to this effect. It was discussed and suggested that the Program Committee devote an evening to the discussion of "Health Insurance", also that Dr. Livingston Farrand, president of the University, be asked to give his paper on "Neurasthenia Among the Indians."

After the business meeting, the paper of the evening was given by Dr. C. T. Burnett on "Acidosis". While the paper was brief, it was extremely interesting and instructive, and to the point. Special attention was paid to the diagnosis of the condition; to the symptoms as well as to the laboratory diagnosis, and considerable reference was made to the study of the cases in the supposed epidemic occurring recently in the eastern United States. Treatment was considered in considerable detail. The paper was freely discussed by most of the members present.

Members present were: Drs. Kate Lindsay, W. A. Jolley, O. M. Gilbert, Francis Ramaley, E. B. Queal, Fred Weber, G. C. Cary, Clay E. Giffin,

A. G. Walker, C. T. Burnett, C. W. Poley, F. R. Spencer, M. E. Miles, W. W. Wasson, C. L. LaRue, Jacob Campbell, Carbon Gillaspie, L. H. Wade, Earl Smith of Nederland, and J. M. Braden of Lafayette.
C. L. LA RUE,
Secretary.

CITY AND COUNTY OF DENVER.

The regular meeting of the **Medical Society of the City and County of Denver** was held October 17, 1916.

President Dr. Sewall being absent, Dr. S. B. Childs presided.

Dr. Carmody reported a case of actinomycosis of the jaw and presented the patient, upon whom he had performed an operation for the resulting ankylosis. It was a most interesting case and the result obtained was excellent.

Dr. D. A. Strickler, Secretary of the State Board of Medical Examiners, gave a summary of the salient features of the medical bill (House Bill 178) which was to be presented to the voters at the election in November. The bill is not ideal, but is the best possible under the circumstances. The necessity of support was forcibly impressed upon the members present. To secure any consideration before the state legislature for measures pertaining to matters of public health members must not only support the bill themselves but also actively enlist the interest and support of their patients and friends.

It was moved and carried that the chair appoint a committee of ten to arrange for and to push a campaign in the interest of the medical bill among the members of the medical profession, and further that a suitable appropriation not to exceed the sum of \$50.00 be made for the advancement of the campaign.

Dr. Aubrey Williams was made chairman of the committee, which consists of Drs. H. G. Garwood, C. E. Cooper, Wm. M. Spitzer, H. R. McGraw, E. F. Dean, A. H. Earley, L. M. Drown, S. B. Eichberg, and A. C. Craig.

The Scientific Program consisted of:
Retroversion Following Labor, by Dr. C. B. Ingraham.

A Phase of Ovarian Secretion, by Dr. C. S. Elder.

Both papers were interesting.

C. F. HEGNER,
Reporter.

A special meeting of the **Medical Society of the City and County of Denver** was held October 30, 1916.

President Dr. Sewall was in the chair.

The purpose of the meeting, as had been announced in the notification cards, was the consideration of Medical Bill No. 178. This Medical Bill was referred to the voters in the November election.

All physicians in Denver; the members of the Denver Dental Society; and the members of the Denver Pharmaceutical Association, were invited and representatives of the three organizations attended in force.

It was stated by the chair that as the meeting was for the deliberations of the members of the Medical Society and of their invited guests, those who might be present without such invitations would be asked to abide by the decision of the majority of the members present. A vote was

taken and being adverse the uninvited guests were requested to withdraw.

The provisions of the bill were reviewed by Dr. C. S. Elder, Dr. D. A. Strickler and others. Numerous questions were answered. Mr. C. H. Haynes, attorney for the State Board of Medical Examiners, who was present by special invitation, discussed some of the features of the bill and solicited questions that any of those present might wish answered.

It was frankly stated that the bill was a compromise. The bill was conceded to be not altogether satisfactory, it left much to be desired, and embodied some very undesirable features. It was far from being an ideal medical bill, but for the safety and conservation of public health it was the best possible under the existing circumstances.

C. F. HEGNER, Reporter.

The regular meeting of the **Medical Society of the City and County of Denver** was held November 7, 1916. President Dr. Sewall was in the chair.

Applications for membership in the Society were received from Drs. McLeod M. George and Frank W. King.

Dr. Edw. C. Hill was exonerated of charges of "violating principles of medical ethics governing the Medical Society" brought by the Board of Censors in a report September 19, 1916.

Dr. Hill's resignation from membership in the Society was not accepted.

The formal opening of the new medical library and meeting hall has been set for the evening of November 29, 1916. A suitable programme for the occasion is being arranged. Dr. Farrand, President of the University of Colorado, will give an address.

At the request of Dr. Jayne an auditing committee was appointed by the Chair to audit the accounts of the equipment fund of the new library and meeting hall. In regard for Dr. Jackson's efforts in raising the fund he was made Chairman of the Auditing Committee, to which Drs. Arndt and Cooper were also appointed.

The Scientific Programme consisted of a paper, "Conservatism in the Treatment of Closed Fractures", by Dr. S. B. Childs, with lantern slides. It was a very interesting paper and demonstration, and elicited considerable discussion.

C. F. HEGNER, Reporter.

EL PASO COUNTY.

The regular monthly meeting of the **El Paso County Medical Society** was held at the library in the Elk's Home, October 11th, 1916. Dinner was served at 7 p. m., the business meeting being held at 8 o'clock. The president, Dr. Boyd, presided, there being forty-eight members and thirteen visitors present.

Dr. D. P. Mayhew, formerly of Colorado Springs, who recently moved to Detroit, Mich., requested that a transfer card be issued to him, which was granted.

Dr. E. D. Downing of Woodmen, Colo., was elected to membership in the society.

Dr. Albert F. Swan of Ramah presented his application for membership in the society.

Drs. Lennox and Hanford were appointed by the executive committee to act as teachers in the First Aid to the Injured Classes being organized by the University Extension Division of the Colorado State University.

Dr. A. H. Peters was appointed a member of a

committee to be composed of members from the following organizations: Chamber of Commerce, Associated Charities, County Commissioners, El Paso County Medical Society and the Humane Society, to see if something cannot be done, through publicity, to discourage the indigent tuberculous, in the last stages of the disease, coming to Colorado Springs.

Dr. Howard Hill of Kansas City, Mo., presented the subject "The Evolution of the Pelvic Floor", illustrated by numerous lantern slides. This proved to be a very interesting subject and was fully discussed.

GEORGE B. GILMORE, Secretary.

LAS ANIMAS COUNTY.

The regular meeting of the **Las Animas County Medical Society** was held Friday evening, November 3rd, 1916. Members present were: Drs. J. G. Espey, L. T. Richie, G. W. Robinson, John R. Espey, C. W. Presnall, H. C. Lee, A. J. Chisholm.

The regular order of business was conducted. Dr. J. G. Espey had just returned from New York and gave us a talk on his trip and his experiences in the New York clinics.

Two applications were presented for membership, and were turned over to the Board of Censors for further investigation. The Society adjourned to meet the first Friday in December.

A. J. CHISHOLM,
Secretary.

NORTHEAST COLORADO.

The **Northeast Colorado Medical Society** met in City Hall, Sterling, November 1st, President Dr. J. K. Dawson presiding.

Medical Ethics was the topic chosen for an address by Dr. Wm. Greig. He was followed by Dr. J. C. Chipman. The topic was handled in a rather practical manner.

This was followed by a paper by Dr. Bush on Placenta Previa. In the discussion that followed Dr. Fox thought the proper treatment was Cesarean section. Drs. Daniels, Chipman and Greig reported cases that had occurred in their practices, and the results obtained by different methods of treatment in this difficult condition. Dr. Babcock thought that the tampon was the safest procedure for the country doctor who was not trained in the technic of Cesarean section.

Dr. Dawson reported an interesting case of Hodgkin's disease. Dr. Fox reported a case of Premature Detachment of the Placenta.

MYRON L. BABCOCK, Reporter.

COLORADO OPHTHALMOLOGICAL SOCIETY.

Meeting of October 21st, 1916, at Colorado Springs. Dr. E. M. Marbourg presided.

Dr. Wm. C. Finnoff, of Denver, was elected to membership in the Society.

Dr. G. C. Cary, of Boulder; Dr. Phil S. Lansdale, of Longmont, and Dr. J. C. Strong, of Leadville, were nominated for membership.

Dr. B. A. Filmer presented a case of Proptosis Due to Sinus Disease.

Dr. E. R. Neepor presented three cases: One of Embolus of the Central Artery and two cases of Stellate Cataract. Dr. Neepor also reported a case of Spasm of the Retinal Vessels.

Dr. E. E. McKeown presented a case of Neuroretinitis Due to Sinus Disease.

Dr. J. A. Patterson presented two cases: One

of Interstitial Keratitis Due to Acquired Syphilis and another of Glaucoma. He also reported a case of Tuberculous Ulcer of the Conjunctiva.

Dr. A. C. Magruder presented a pathological specimen: an enucleated eye. He also reported a case of Eye Injury and one of Luetic Ocular Paralysis.

Dr. E. M. Marbourg presented four cases, one of Cryptophthalmos, one of Microphthalmos, one of Pseudoglioma and another of Sarcoma of the Choroid.

Dr. F. R. Spencer presented a Bausch and Lomb Exophthalmometer for inspection.

For fuller reports see the Ophthalmic Record and the Annals of Ophthalmology.

FRANK R. SPENCER,
Secretary.

Book Reviews

A Text-Book of Practical Therapeutics. With especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By Hobart Amory Hare, B.Sc., M.D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson College, Philadelphia; Physician to the Jefferson Medical College Hospital, etc. Sixteenth edition, revised and enlarged. Imperial octavo. 1,009 pages, with 149 engravings and 17 plates. Cloth, \$4.75, net. Lea & Febiger, Publishers, Philadelphia and New York, 1916.

This author is so well known to the medical profession of the country that he needs no introduction. Twenty-six years ago he put out the first edition of this work which has passed through sixteen editions, which testifies to the esteem of the profession.

The author adheres to the original object in writing the first edition, "to afford the reader a ready reference book to which he may turn at short notice for desired therapeutic information". This information is made more accessible by a copious explanatory index of diseases and remedies.

Part One. General Therapeutical Consideration. This treats of therapeutics in a general way. He emphasizes the need of a knowledge of drugs, their physiological action and therapeutical use, suggesting that therapeutical nihilism is engendered by lack of proper training and of experience in the application of remedies in disease. The importance of therapeutics is apparent when one realizes that it is the only universally used part of medicine, for each and every branch resorts to it. The author makes plain that if one is to get the best results, exact diagnosis must be had before remedies can intelligently be applied.

Part Two. Drugs. The author has eliminated from consideration a large part of the less important drugs, emphasizes the value of many of the older drugs, and considers the more promising of the newer drugs.

Part Three. Deals with remedial measures other than drugs, such as serums and vaccines, heat and cold, climate, rest and exercise, transfusion, vaccine-therapy, feeding in sickness, table of food values, etc.

Part Four. Diseases. In the treatment of different diseases, his idea is not a rigid system of treatment, but rather the bringing together the best remedies for each disease and showing how

and why they are given. The treatment advised is in accord with the generally accepted views of the day, having been thoroughly revised. The busy practitioner will appreciate a work like this in which he can readily find what he wants, presented in a practical and concise way.

Dr. Hare's years as instructor in therapeutics, materia medica, and diagnosis in one of our leading medical schools, and writer on therapeutical subjects, along with his laboratory and bedside experience, have made him a most practical writer on his subject.

The reviewer feels that he cannot recommend this book too highly. H. S. S.

Applied Immunology. The practical application of Sera and Bacterins prophylactically, diagnostically and therapeutically. With an appendix on serum treatment of hemorrhage, organotherapy and chemotherapy. By B. A. Thomas, A.M., M.D., and R. H. Ivy, M.D., D.D.S. Second Edition Revised. Price, \$4.00. Published by J. B. Lippincott Company.

The authors claim to have crystallized and detailed the practical phases of serum and bacterin applications in medicine for the student and practitioner in order to give them an intelligent understanding of the subject of immunology, and thus enable them to more competently apply its principles.

It is to be regretted that in the chapter on tuberculin therapy no mention is made of the work of Much and his co-workers on the subject of partial antigens.

The book, however, is full of "meat", avoids the discussion of experimental and theoretical phases of the subject of immunology, and admirably fulfills the aims as laid down by the authors in their preface. S. S.

Examination of the Urine and Other Clinical Side-Room Methods. By Andrew Fergus Hewalt, Tutor in Clinical Medicine, University of Edinburgh. 5th Ed. \$1.00. Paul B. Hoeber, New York.

This little volume on clinical laboratory methods is of a pocket size, covering 200 pages, and recommends itself to the practitioner for quick and ready reference as well as portability.

The description of the technique is short and to the point, so that the busy practitioner is not distracted by wading through irrelevant details.

The American reader of this British manual will frequently come across methods in urinalysis little known here which are popular abroad.

Besides the chapter on urine which comprises the greater portion of the book, a brief outline is found on examination of blood, sputum, gastric contents and feces.

The handy size (32 mo.), aside from its intrinsic value and low price, should tempt the physician to get a copy. P. H.

Medical and Surgical Reports of the Episcopal Hospital, Philadelphia. Vol. III. Philadelphia, Press of Wm. J. Dornan, 1915.

This volume contains papers from all departments of the Episcopal Hospital of Philadelphia, and compares very well with the reports of the Mayo Clinics. The volume is edited by Astley P. C. Ashhurst, whose papers throughout the volume are perhaps the most interesting and instructive.

His best paper is on "The Prevention and Treatment of the Disabilities Following Fractures of the Limbs", and here he condemns too fre-

quent open operation for fractures, stating that nearly all fractures which require operation for the relief of disability due to malunion of the bones are fractures near joints, because close to a joint very slight deformity may make great disability. In old diaphyseal fractures it is non-union or concurrent lesions of the soft parts rather than malunion that requires operative interference. A frequent cause of disability is the accompanying lesions of the soft parts which are not properly treated. Too early passive movement are useless and often are harmful.

Ashhurst also reports some good results in five cases of arthroplasty of the elbow and one case of ununited fracture of the neck of the femur treated by bone-graft. Piersol reviews the subject of functional kidney tests, and Stevens gives some new ideas in the hyperchlorhydric syndrome. R. G. P.

The Medical Clinics of Chicago. Volume II, Number 2 (September, 1916). Octavo, 196 pages, 22 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Price, per year. Paper, \$8.00. Cloth, \$12.00.

The first case is one of Acute Miliary Tuberculosis, by Williamson, peculiar in that a Widal early in the case was later negative. The correct diagnosis, confirmed at autopsy, had been made by elimination. Abt tells how to feed the normal baby, but his mathematical method is even more discouraging than the algebraic calculations he criticises.

Hamil cites an unusual case of Multiple Sclerosis, a case showing a history of chorea, and also symptoms of progressive lenticular degeneration. Etiology and Treatment of Acne is well taken up by Zeisler. He spurns any microbic etiology, and relies more upon disturbances in the physiology of the generative organs. Vaccines have proved a decided failure, efficient treatment consisting in a regular and bland diet, exercise, and local and internal stimulating medication. In an excellent clinic on Chronic Diarrheas, showing cases of Chronic Colitis, Mucous Colitis, and Achylia Gastrica, Friedman discusses stool examinations, and goes into detail regarding dietetic management.

Portis has a most unusual case, Syphilis of the Stomach. He admits that the diagnosis is rarely made, says the symptoms are not characteristic, and states that the clinical picture is most variable, simulating non-specific pyloric stenosis, ulcer with hemorrhage, carcinoma with tumor, or chronic gastritis. The diagnosis, then, must depend upon recognition of syphilis elsewhere, history of infection either acquired or congenital, serologic tests, and suspicious X-ray findings. The X-ray findings are not pathognomonic, but usually show a "dumb-bell" or "hour-glass" stomach with picture of obstruction. "Possibly the dumb-bell appearance described by Lewald and the X-ray findings described by Case, which is a contraction of the pyloric half of the stomach due to an extensive cirrhotic change, may be characteristic of syphilis." R. G. P.

Pharmacology and Therapeutics. By Horatio C. Wood, Jr., M.D., Professor of Pharmacology and Therapeutics in the University of Pennsylvania; Second Vice-Chairman of the Committee of Revision of the U. S. Pharmacopeia. Second Edition, cloth, price \$4.00. Pp. 455. Published by J. B. Lippincott Co., 1916.

While the scope of this edition is the same as

that of the previous one, extensive alterations have been required to keep pace with the advances in pharmacology. The articles on veronal, digitalis, pituitary, atoxyl, and salvarsan have been almost entirely changed. About twenty substances not considered in the previous edition receive notice in the present one, among which may be mentioned agaricin, apiol, bromural, chrysarobin, picrotoxin, homatropin, aspidosperma, and thiosinamin. A number of unofficial drugs are considered because the author believes them to be of practical importance, also drugs of little or no therapeutic importance are included because of their recognition by the pharmacopeia, such as musk, arnica, eriodictyon, quassia, sarsaparilla, and couch grass.

Less commendable is the change of the familiar "c.c." to "mil", which is another innovation in the U. S. Pharmacopeia. It is out of harmony with the simplicity of the metric system, since it may be mistaken for the abbreviation of milligram or other words derived from "mille". However, the author believes that for obvious reasons it is important that a text book for students should recognize the legal authority of the country on the subject of drugs. This volume can be accepted as an excellent contribution to the science of pharmacology and will prove of value to both student and practitioner.

J. L. M.

International Health Commission. Second Annual Report: Paper: 204 pp. Published by the Rockefeller Foundation, New York.

The giant tasks assigned the Commission, in its creation, were to cooperate with this and other governments in devising measures for the control of hookworm disease, and to follow up this campaign with the institution of agencies "for the promotion of public sanitation, and the spread of the knowledge of scientific medicine". It would seem from a perusal of this splendid report that the Foundation is most ably carrying out these functions. Not only in the infected areas of the United States, but in Central America, the West Indies, Egypt, the Federated Malay States and the Orient, agents of the Commission have made exhaustive investigations and have established numerous stations where endemic diseases may be treated on modern lines.

In all, ten southern states and thirteen foreign governments have received during the past year the benefits of this great philanthropic enterprise. Certainly at a time when the energies of half the civilized world are dedicated to the business of taking life, the modest appeal of those intent on preserving it should be welcome reading. J. W. A.

Infections of the Hand: A Guide to the Surgical Treatment of Acute and Chronic Suppurative Processes in the Fingers, Hand, and Forearm; by Allen B. Kanavel, M.D., Assistant Professor of Surgery, Northwestern University Medical School, Attending Surgeon, Wesley and Cook County Hospitals, Chicago; Third Edition, Thoroughly Revised; Illustrated with 161 Engravings; Lea & Febiger, Philadelphia and New York; 1916.

This extremely valuable and important work upon a branch of minor surgery which is often of vital significance both to patient and practitioner is already familiar to a wide circle of readers. It should be in the hands of every general practitioner who is likely to become responsible for the care of acute infective processes below the elbow; but above all it should be the intimate associate of every surgeon who is engaged in industrial

practice. The outstanding feature of the volume is the keenly logical presentation of the several branches of the subject; it being above all clearly recognized and demonstrated that a close familiarity with the detailed anatomy of the fingers, hand, and forearm is absolutely indispensable for the accurate diagnosis, localization, and treatment of these infective conditions. A text of exceptional clearness of statement is supplemented by a great wealth of valuable illustrations, prepared under the direction of the author, and many of them photographic. The importance of pathologic sections is adequately recognized.

Two new features have been added to the present revised edition. The first is a chapter on the relation of acute infective processes to industrial pursuits, by Dr. Harry E. Mock; and the second a chapter by Kanavel in which are detailed the results of his clinical experience in attempting to restore function to old contracted hands. After several of the chapters résumés have been inserted which it is believed will be of assistance to those who wish to use the book for rapid consultation, but the author advises earnestly that comprehensive reading of the preliminary anatomic and experimental matter is necessary for accurate diagnosis of the various types of infection.

COLORADO STATE MEDICAL SOCIETY.

Constituent Societies and Times of Meeting and Secretaries.

Bent County, first Tuesday of each month; P. A. Leedham, Las Animas.

Boulder County, every Thursday; C. L. La Rue, Boulder.

Crowley County, second Tuesday of each month; E. O. McCleary, Ordway.

Delta County, last Friday of each month; W. Scott Cleland, Delta.

Denver County, first and third Tuesday of each month; H. R. Stilwell, Denver.

El Paso County, second Wednesday of each month; G. B. Gilmore, Colorado City.

Fremont County, fourth Monday of January, March, May, July, September and November; R. C. Adkinson, Florence.

Garfield County, second Thursday of each month; W. W. Frank, Glenwood Springs.

Huerfano County, P. G. Mathews, Walsenburg.

Lake County, first and third Thursday of each month; J. C. Strong, Leadville.

Larimer County, first Wednesday of each month; C. C. Taylor, Fort Collins.

Las Animas County, first Friday of each month; A. J. Chisholm, Trinidad.

Mesa County, first Tuesday of each month; R. B. Harrington, Grand Junction.

Montrose County, first Thursday of each month; S. H. Bell, Montrose.

Morgan County, E. E. Evans, Fort Morgan.

Northeast Colorado; N. Eugenia Barney, Sterling.

Otero County, second Tuesday of each month; R. S. Johnson, La Junta.

Prowers County, first Tuesday of each quarter; Lanning E. Likes, Lamar.

Pueblo County, first and third Tuesday of each month; J. H. Woodbridge, Pueblo.

Routt County; H. C. Dodge, Steamboat Springs.

San Juan County; F. W. E. Henkle, Silverton.

San Luis Valley; L. L. Herriman, Alamosa.

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Tri-County; C. W. Merrill, Burlington.

Weld County, first Monday of each month; J. W. Lehan, Greeley.

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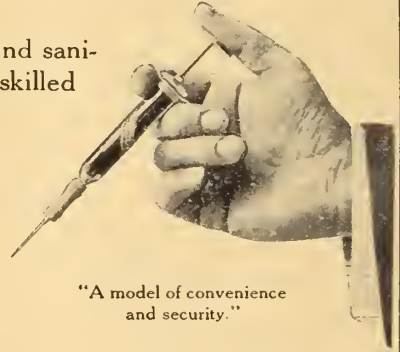
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DENVER OPENS ITS NEW LIBRARY AND HALL.

The formal opening of the new library and assembly hall of the Medical Society of the City and County of Denver was fittingly celebrated on Wednesday evening, November 29th.

The ceremonies were preceded by a dinner at the Albany hotel at 6:30, to which there sat down, not only a large proportion of the membership of the County Society, but a goodly sprinkling of representative physicians from all parts of the state, Colorado Springs being notably well represented.

The "corpus sanum" having been secured by means of good food, lively though ancient music from the orchestra, and finally by a characteristic talk from Dr. J. N. Hall, regrettably curtailed by unforeseen circumstances, adjournment was taken to the new assembly hall for the sustenance of the "mens sana". Here after a brief period of inspection the formal exercises were opened by Dr. Henry Sewall, who as President of the County Society introduced President Livingston Farrand of the University of Colorado.

President Farrand's address¹, which will be found in full elsewhere, most fittingly struck the keynote of the feeling aroused by the occasion—service to the profession, the preservation of the memories and works of those whose labors had made possible this occasion, and above all service to community, state and nation.

Following this address Dr. W. A. Jayne read a letter² from Dr. Fielding H. Garrison, of the Surgeon General's Library, congratulating the Society upon its achievement and

recalling the history of the Denver Library from its inception by a small group of unselfish men to its present attainment. Dr. A. C. Magruder of Colorado Springs, President of the State Medical Society, spoke of what this library could mean to physicians elsewhere in the state, emphasizing its value, not only as a readily accessible store of information, but in its broader usefulness as a means of bringing together in closer touch physicians in every community. Dr. Charles S. Elder of Denver spoke on behalf of the members of the Medical Society of the City and County of Denver, thanking the Board of Trustees for the time, energy and care expended in the development of this new home of the Society. "It is meet, too," said Dr. Elder, "that we should do honor to the pioneers whose devotion has made this later development possible", and to that end he proposed that a committee should consider the erection of a fitting memorial to these men. Dr. G. A. Boyd, President of the El Paso County Medical Society, spoke of the cordial relationship existing between the physicians of Colorado Springs and those of Denver and outlined the excellent beginning of a medical library now being made by the El Paso Society, emphasizing, too, the value of the historical section of such a library and the necessity for a historical perspective in Medicine. The ceremonies closed with a report from Dr. C. B. Van Zant, Chairman of the Board of Trustees, outlining some of the difficulties and triumphs through which the Board has carried this enterprise to so successful a conclusion.

It is peculiarly fitting that the new library should have been completed and its dedication have been held under the presi-

dency of Dr. Henry Sewall, who was one of the earliest to behold the vision, one of the most zealous workers for its fulfilment, and who has been throughout one of the foremost exponents in Colorado of the spirit of Medicine of which the broadly equipped library is the visible exemplification. It need not be said then that Dr. Sewall's introductory remarks were imbued with the spirit of the occasion and that its significance cannot be better expressed than in his own words: "Books are the distillate of men's souls, and within their covers we may commune with the choicest spirits of all times."

The new library building, fronting on Court Place, is two stories in height to a depth of forty-five feet, beyond which, over the assembly hall, it drops to a height of one story, affording opportunity for the admission of light and air through the skylights to the hall below. It is of modern fireproof construction throughout, especial attention having been paid to safeguarding the library. The frontage on Court Place is of ornamental terra cotta brick and bears the words "Medical Library" on the entablature. Entrance to the library and assembly hall may be made from Court Place or from the adjacent Metropolitan Building through a long hall, lined with portraits of men whose names and labors are famous in the history of Medicine.

Entering the library one comes first upon the librarian's desk, to the right of which, separated from the general library by oak partitions, is the librarian's private office and work room. Fronting the door, and occupying nearly the entire length of the northeast half of the large library room, are well filled steel stacks. These stacks reach a height of about seven and a half feet at present, and are so constructed that a second tier of equal height may be placed upon the first to accommodate future growth. Along the southwest wall are placed tiers of conveniently angled steel shelves holding the current numbers of periodicals. Between the rows of stacks and the periodical shelves to the southwest, and between the end stack and the wide-windowed northwest wall, are ranged broad library tables, lighted by soft-shaded standard fixtures, and attended by comfortable chairs. Returning to the south-

east end of the room one finds another long library table, and shelved about it the collection of atlases and books of reference. Through a door at this end is seen another large room, closely filled with steel stacks, where are kept duplicate books and journal files. Ascent of a short flight of steps leading from this door gives access to a small but comfortably appointed smoking room. To those long accustomed to the crowded unrest of the old library, the first impression made by the new will be one of quiet spaciousness, an impression well calculated to foster the atmosphere of studious activity for which the new library will stand.

Entering now the assembly hall one notes the same sense of rest and spaciousness, an effect secured by the excellent proportions of the room, by the reduction in size and number of supporting pillars as compared with the old hall, and by the agreeable color scheme of soft greens. The center of the northeast wall is occupied by a slightly raised platform furnished in well upholstered mahogany, so massive as to give a somewhat crowded appearance to the platform. To those who, in the old hall, have ruined their eyesight listening to scientific papers, the installation of a reading desk with light shaded from the audience is a notable feature. The seating capacity of the hall is two hundred and ten, and the attendance at future meetings should be materially increased by the exceedingly comfortable opera chairs with which it is equipped. The balopticon and a motion picture machine have been placed in a special gallery built into the rear or southwest wall and largely outside the hall itself, giving a safe and not unsightly solution of what is commonly a troublesome problem. The provision of a well equipped dressing room for patients presented to the Society is an excellent innovation. Ample light is secured by day through the windows and two large skylights, and at night by a pleasing indirect lighting system. Ventilation was put to the test by the large audience of the opening night, and proved very satisfactory. Perhaps most important of all, the acoustic properties, always uncertain until actually tested in use, proved good beyond criticism.

Altogether the Medical Society of the City

and County of Denver may well congratulate itself upon its new home, for which so little that is not high praise can be expressed. It is fitting, too, that a large measure of praise should be accorded to the trustees and the architect, to whose cooperative labors the excellent result is due, and to the Metropolitan Realty Company, whose generosity has in large measure made the enterprise possible. So successful an issue should serve to stir the Society to turn with new energy to the task of raising funds for the purchase of the building itself.

C. N. M.

1 See p. 363.

2 See p. 366.

THE LIBRARY OF THE SURGEON GENERAL.

The establishment and rapid growth of the medical library in Denver is an incident in a general awakening to the importance of adequate library facilities for medical thought and knowledge. Many other cities are proceeding as far as their means allow in the same direction. The opportunities afforded by our Denver institutions for medical library research are finer than any but a few careful workers are perhaps likely to realize. At the same time there is a more or less definite limit to the extent to which individual states and cities can supply whatever may be demanded by students and authors. The ultimate source of supply of the more unusual or remote references must inevitably be found in the great national centers. The master collection of medical literature in this country is of course the Library of the Surgeon General in Washington, D. C. This great department of the United States Army, for such it officially is, contains in round numbers two hundred and twenty-five thousand volumes, three hundred and forty thousand pamphlets, and over five thousand portraits. It subscribes for or receives about one thousand nine hundred current periodicals, including, so far as is known, every medical journal published anywhere in the world.

Physicians living at a distance of two

thousand miles from the city of Washington may say: "But of what advantage is this enormous library to me, who have neither time nor opportunity to use its books and papers?" It should be more generally known that modern library organization renders available even to those a great distance away any of the works (except the very rarest specimens and unbound current journals) contained in the Surgeon General's Library. (This arrangement is analogous to that by which members of the Colorado State Medical Society are enabled to utilize the combined state and local medical library in Denver.) All that is necessary is that the physician shall make his request through some channel which will establish his identity, such for instance as his local public library or any local medical library such as that now existing in Denver; the borrower paying the cost of postage or expressage each way. Books thus borrowed may be retained for two weeks, or for a longer period upon request properly made, provided there has been no other application for the book.

The Medical Library in Denver contains the complete catalogue of the Library of the Surgeon General, so far as it has been published; there being of course, in such a huge enterprise, always a large number of publications which have accumulated since the date of issuing the printed catalogue. The completeness of the great catalogue of the Surgeon General's Library may be indicated by stating that the subject "Syphilis" was represented by one hundred and nine pages in the first series of the catalogue, to the year 1891, and one hundred and ninety-nine pages in the second series, to June, 1912; while the subject "Tuberculosis" covers forty-seven pages in the first series (to July, 1913). Information as to more recent publications may be obtained from the Index Medicus, which is published monthly, and a complete file of which is also owned by the Denver Medical Library; or further by writing to the Library of the Surgeon General for copies of the cards in the card catalogue, a nominal fee being demanded for this service.

MEDICAL LIBRARY HISTORY.

A paper by the librarian of the Surgeon General's Library (Bulletin of the Medical Library Association, N. S., Vol. 6, No. 2), from which has been gathered the information above given concerning the Surgeon General's Library, reviews the history of medical libraries. Under the Ptolemies in Egypt, many hundreds of years before the days of printing, several hundred thousand rolls were collected in the great libraries of Alexandria. By the fourth century of our era, Augustus Cæsar and his successors had established in Rome a score or more of public libraries, and other large collections developed in Constantinople. Many of these libraries were later destroyed, sometimes by fire, sometimes by the uncultured invaders from northern Europe. In the Middle Ages libraries were for some time chiefly of monastic origin, but later on large collections of manuscripts grew up in connection with the great universities. The Arabians built up large libraries in Bagdad, Cairo and other places. According to the Encyclopedia Britannica the first modern library was founded in Venice in 1436. Today the library of the British Museum contains about two million volumes, the National Library in Paris three million volumes, the Imperial Library in Petrograd over two million, the Royal Library in Berlin a million and a half, the Library of Congress over two million, and so on.

The specialized collection of medical works, either as large private libraries or as separate parts of public libraries, is first noted as occurring about the time of the Renaissance. In the present day there are many private medical libraries of great renown, more particularly in relation to special branches of medicine. The first printed medical publications with which we are acquainted date from about 1462 to 1470 A. D. Books printed before the sixteenth century are technically known as incunabula. At the present time the greatest medical libraries of the world are the Library of the Faculty of Medicine of Paris, two hundred and twenty-five thousand volumes; of the Imperial Military Academy of Petrograd,

one hundred and eighty thousand volumes; of the Royal Academy of Medicine at Brussels, one hundred thousand volumes; of the Royal College of Physicians of Edinburgh, over one hundred thousand volumes; of the Royal Society of Medicine of London, eighty thousand volumes; the various medical libraries of Berlin, totalling about two hundred and twenty-five thousand volumes; that of the Medical College of Bengal, in Calcutta, India, over-five hundred thousand volumes; and last, but not least, the Library of the Surgeon General's Office of the United States Army, which is perhaps the largest and most important medical library not only in the United States but in the world.

THE ELECTIVE PROPERTY OF THE STREPTOCOCCUS.

We are coming more and more to believe in the definite elective properties of the different strains of certain bacteria. We now recognize, for instance, that such an epidemic of sore throat as existed a year ago was due to a special strain of streptococci.

Some little time ago Rosenow of Chicago proved that ulcer of the stomach is usually due to a streptococcus of a particular grade of virulence, irrespective of its original source. And now he has recently studied (The Journal of Infectious Diseases, vol 19, page 527) the occurrence of cholecystitis and gallstones resulting from the intravenous injection of bacteria of strains of definite virulence. As regards a series of cases of cholecystitis, he has recorded the results of cultures from the liquid content of the gall-bladders, from the centers of the gallstones, from the walls of the gall-bladders, and from the adjoining lymph-glands, and he has summarized the results of animal experimentation with the bacteria isolated. Cultures were made from forty-seven cases, in over half of which bacteria were found in the bile, stones, bladder-walls, and glands. The remarkable finding was that the bacteria were nearly always streptococci or colon bacilli separately or together, or more rarely combined with some other organisms.

Lesions of the gall-bladder developed in

seventy-nine per cent. of the animals injected with such cultures. This election for the gall-bladder was greatly diminished after continued cultivation on artificial media. While affinity for the gall-bladder was evidenced by sixteen strains of streptococci, the colon bacillus only showed such affinity when it had not been in combination with the streptococcus. In three patients who had been troubled with recurring attacks of cholecystitis, bacteria from the tonsils were cultured and injected into two dogs and four rabbits. The gall-bladders of two dogs and two rabbits developed lesions. When cultures were made from cases of acute cholecystitis, the dogs injected showed more marked lesions of the gall-bladder than did the dogs that had been injected with cultures from cases of chronic cholecystitis. The virulence of the strains could be lessened by artificial cultivation or increased by animal passage, while the strains grown artificially acquired greater affinity for the stomach and appendix, and those passed through animals obtained affinity for the pancreas.

Since streptococci have been demonstrated by Rosenow in a high percentage of chronic cholecystitis cases, and since there is manifested an election of these organisms for the gallbladder in animals, and since moreover the strains from these experimental lesions will reproduce the same lesion, must we not conclude in accordance with Koch's law, that streptococci are a cause if not the cause of cholecystitis? The advisability of cholecystectomy in such instances could not be shown more clearly, for the intermittent exacerbations of gall-bladder trouble are certainly due to a greater activity of the bacteria when the patient has a lowered resistance.

Though the colon bacillus may be the primary cause of cholecystitis in certain cases, it is usually the secondary invader. Incidentally Rosenow demonstrated a case of cholecystitis appearing during convalescence from typhoid, but in which the causative bacterium proved to be not the typhoid bacillus, but the streptococcus.

As time goes on, we shall likely find more

and more organic lesions to be due to specialized microbial activity.

R. G. P.

Original Articles

THE LIBRARY AND ITS MEANING.*

LIVINGSTON FARRAND, M. D., PRESIDENT
OF THE UNIVERSITY OF COLORADO,
BOULDER.

The privilege of taking part in the ceremonies of dedication of this new library building is one upon which I place a peculiar personal value. Barred as I find myself to a daily increasing degree from the life of a student, the delights and interests which are symbolized by any collection of books take on an added luster. It is, therefore, perhaps not unnatural that this occasion should summon certain reflections born of deep feeling and tinged tonight with a certain wistfulness which no booklover could avoid.

As the art of medical practice has added to itself a basis of science and as the latter aspect of medicine has developed its importance, often to the dismay of the busy practitioner, the habit and life of the physician have been profoundly affected.

There is, it is to be feared, a popular fallacy abroad as to the purpose and result of professional education. The graduate of the professional school is apt to be regarded as emerging from his years of supervised training a physician or a lawyer or an engineer or whatever may be the designation agreed upon to differentiate the group for membership in which his school years have been avowedly preparing. Nothing could be more pernicious in the way of misconception. The ideal of professional education is first and always to prepare a student to *become* the practitioner in whatever may be his chosen field. The young graduate who has thoroughly apprehended this truth has set his foot on the ladder of success. His fellow who regards his degree as a stamp of quali-

*Address delivered before the Medical Society of the City and County of Denver at the opening of the Society's new library and assembly hall, November 29, 1916.

fication completed is already a failure.

The critical period is in the early years of professional practice, when a new life must be ordered, when new habits must be formed and when the attractions of material success glow with a dazzling light and seduce with alarming ease so many recruits from the army of young professional men. This is obviously true of all professions but it seems to be notably a danger in medicine. The stage of equilibrium when the young physician ceases to be a seeker after knowledge and is satisfied with an increasing circle of patients is apt to be reached at an early age. To accept a measure of achievement which is based upon practice and income and not upon knowledge, skill and service is a fallacy to which the young practitioner is peculiarly apt to fall a victim.

All this is clearly recognized by anyone who gives it a moment's thought. What is not so obvious is that environment and opportunity have much to do with the situation. Here and there, to be sure, is one of those rare souls whose intellectual eagerness will overcome all obstacles, whom the isolation and restrictions even of country practice cannot daunt in the restless search for hidden causes and obscured truth. The early history of medicine in America contains an honor roll of men whose achievements in medical observation and research are an un-failing inspiration to every man who is striving in any isolated community to improve his equipment or, more admirable still, to contribute his mite to accurate knowledge. I know of nothing more inspiring to the intellectually lonely young doctor than the story of Ephraim McDowell in his little village on the Kentucky frontier, no less a pioneer in medical science than in the westward sweep of the American nation. Or who can fail to draw both lesson and hope from the example of William Beaumont when he seized his opportunity at his post in the northern wilderness and not only opened the door to a veritable army of laboratory workers in a new and fundamental field but himself set a model of persistence and method in an environment of the crudest? If more brilliant stars are called for we need never forget that Edward Jenner did his epoch-

making work in a Gloucestershire village and Robert Koch laid the foundations of a new science in a German country town.

Unfortunately the born and irrepressible student is the rare exception. The overwhelming majority of us are the products of our surroundings and obvious opportunities. We do what others do and little more. There are in this latter class, however, those who under stimulus and pressure do advance and sometimes do achieve and it is with them that the medical library undoubtedly plays a leading part.

It is a sad commonplace that the life of the world is full of worthy impulses which die before they have given rise to action—at least to the point of recognition. It is doubtless true that the evaporation of good intentions is due for the most part to that constitutional inertia which brands us all. There is, however, no inconsiderable number of ideas and impulses which would grow and flower if nurture could be afforded the tender seedlings of thought, and in the long run there is no nourishment which can compare with the literature of the field to which the new-born idea belongs.

It is not necessary that the flash should be a contribution to world-knowledge; to furnish such is vouchsafed to few. Its value is no less real if it has stimulated its owner to an afternoon of reading in this library and thus tended to fix in him the habit of the student, of the man who seeks to know that which was unknown to him before, for of such are a community's worth-while men made up.

For me this is the first and greatest service of the library in whose new home we gather tonight. To afford a laboratory in which the physicians of the city and state may cultivate and fix the habit of the student is a service worthy of any sacrifice.

I do not for a moment belittle the practical value of the medical library as a professional asset. As has been already indicated the bewildering development of modern medicine has made easy access to its periodical literature an absolute essential to professional competence. The current journals in necessarily three, preferably four, and desirably five modern languages are the ev-

ery-day tools of medical practice. One need not qualify the assertion that no physician today is competent in his work who is not an habitual reader of the periodical literature of his subject.

There is another side which is not quite so obvious and to which I find myself giving greater weight as the years go on. Methods in science and art develop and change, but through modification and shift persists always the value of historical perspective. It is quite impossible to understand modern civilization without a study of the more primitive conditions from which it has evolved by slow degrees. What is true of human life is true of human knowledge. Full understanding involves the steps by which any field of science has reached its contemporary stage. Sound judgment as to the value of any new observation is dependent to a high degree upon the background of historical knowledge against which the new fact projects itself in the mind of the reader. The great teachers of medicine have almost invariably been men for whom insistent reading has afforded a historical perspective. Not always themselves giants of original research they have always been able justly to evaluate the new and, more vitally important for the progress of science, to indicate the gaps which must be filled. And thus, through them and their pupils, the boundaries of known truth have been enlarged.

And so, gentlemen, I plead for a study of books. Not the compendiums and handbooks and digests of the present—their indispensability is self-evident—but books of the past. I am quite aware that the reading of the old will appeal to but few. Those few are apt to be, nevertheless, the intellectual leaven in the profession of the community in which they reside. I wish it might be possible for this society to meet at not infrequent intervals in these surroundings for studies of the past in medicine and so arouse here and there in the breast of a new member a love for the history of his art which would lend a hitherto unknown charm and satisfaction to the practice of a profession which by its very nature tends to become absorbed in the unavoidable facts of every day.

May I be permitted yet another plea which this occasion suggests? It is that the society will make this library the active collecting agent and depository for the medical memorabilia of this mountain region. Short as its history is it is stirring with interest, and each year there disappear through death of pioneers memories which if recorded and preserved under these auspices would furnish the material for studies of fascinating value by future generations. Everything which can be found which pertains to the life and work of Eskridge and Parkhill, of Denison, Solly and Fisk, of Baneroft and Hawes and the other outstanding figures who have gone before should here be held and guarded as a sacred trust, for in years to come such archives will be the priceless sources for research in the early history of great communities.

The lapse of but half a century has made it evident that in the settlement of Colorado and the adjoining commonwealths there were factors of unique significance in the westward movement upon which the modern American historian is laying increasing stress. The story of the colonies on the eastern slope of these Rocky Mountains, which we now know by the names of the cities to which they gave birth, is already attracting the attention of the technical students of our national life. The history of the period would be notably incomplete without an account of the part played in it by our own profession, and this society is the natural guardian of its records.

In congratulating you and the profession of the state, as I do with an earnestness which I cannot express, upon the possession of this new home and all that it may be made to mean for the welfare of our people, I must add a closing plea. When the burden of war under which Europe is staggering today has been lifted, the world will face its period of readjustment. Let no one for a moment believe that our nation can stand apart from the crisis or be exempt from responsibility for its share in the solution of the world's problem. We are facing tasks and tests by which our democracy shall stand or fall. In more than one of these the medical profession is by its very field peculiarly involved.

Whatever may have been its aloofness in the past it can no longer avoid its responsibility of citizenship. I have been pleading tonight for breadth of view in a professional field, but it has been equally a plea for a view which will embrace the problems which face us as men and as citizens. May this library, symbolizing, as it does, the unity and the technical ideals of the medical profession of this community, symbolize as well the devotion of that profession to the service of the State, of the Nation and of Humanity.

GREETINGS FROM THE SURGEON GENERAL'S LIBRARY.*

FIELDING H. GARRISON, M. D.

It is an unusual honor to have the privilege of saying a few words on this occasion, and on behalf of Colonel McCulloch, Librarian of the Surgeon General's Office, and the Library Staff, I beg to extend to the Denver Medical Library the cordial greetings of all associated with your national medical library in Washington, hearty congratulations to you upon the acquisition of your splendid new home, and our most sincere good wishes for your continued prosperity and success. It has been a matter of keen regret that none of us could be present at your house-warming, but I beg to call your attention to the fact that long distances seem much greater to the eastern man than to the western man. In the West, as Jack London has said, the men bulk big and the job seeks the man. This is because you have abundant space to turn around in. In the East, we are closely crowded together, the man seeks the job, and has to stick to his job. Do not forget this distinction in judging of the overcrowded people of the East, for it is fundamental. Your Burton Society reprinted the Benares edition of the Arabian Nights, that great document of the cultural side of Mohammedan medicine. You published the first periodical devoted to medical libraries. No less than Sir Michael Foster came to your city to deliver the most

charming address he ever made, and now you have a new home which probably makes our building, put up thirty years ago, seem outpaced and outmoded. All we can do is to wonder and admire, and it is not even necessary to indulge in predictions as to your future accomplishment, for that will take care of itself. This hall represents the formula from which the mathematical curve of your future will flow, as a natural consequence.

In the thirteenth century, there lived a famous Castilian king, called Alphonso the Wise, who once remarked that "had he been present at creation, he could have given some useful hints for the better ordering of the universe". As might be expected from an ambition of this kind, his own reign was singularly disastrous and unsuccessful, and he was ultimately dethroned by his own son, dying of a broken heart. I once heard of another enterprising theorist of this type who, when asked point-blank what he would first do to improve the present order of the universe, replied: "I should make good health more catching than disease". Aside from the "joker" carefully concealed in this statement—the fact that if good health were not, in the scheme of nature, "more catching than disease", we should none of us be alive here on earth today—the truism at least shows how omnipresent is the thought of disease and death, and consequently of medicine, in the human mind. How reluctant the savage is to accept disease and death as finalities, how prone he is to regard them as the work of demoniac powers, something which would not have taken place in the ordinary course of nature, if his enemies had only let him alone, is a commonplace of folklore. And civilized man does not differ one whit from the savage in this regard. It is not odd therefore that medical libraries should have existed from the earliest times. I will not bore you here with their early history, with the various collections of Babylonian burnt bricks, Egyptian papyri, Oriental writings on birch bark, palm leaves, silk and bamboo, Greek and Roman parchment rolls, nor with their later developments, down to the great medical collections of Paris, Petrograd and London. But I should like to have the privilege of

*Conveyed through Dr. W. A. Jayne to the Medical Society of the City and County of Denver, at the formal opening of the new library and assembly hall, November 29, 1916.

saying a few words about the history of your own library and of the men who made all medical libraries in this country possible.

In 1893, the Colorado Medical Library Association was organized, was given a local habitation in the Denver Public Library, and fostered by Mr. J. Cotton Dana, its then librarian. At this time, only books were published, little attention was given to periodicals, and even the arrival of a large consignment of duplicates from the Boston Medical Library did not suffice to awaken the divine fire. Dr. Charles D. Spivak worked with enthusiasm and devotion for the cause, and Dr. J. T. Eskridge, the prime mover in the organization, left it a legacy of \$1,000 at his death in 1902. In 1903 a movement was inaugurated to form another library association. In 1904 rooms were actually engaged, a few books and files of journals placed in it, an attendant engaged at a small salary, subscriptions for periodicals were sent out, and scientific meetings were held to further the enterprise, but as the years went by financial support again waned, as in 1900, although many of the journals were constantly on file. The association was kept alive, however, by the superior character of the scientific meetings of the Denver Academy of Medicine, with the final result that, in 1909, the County Society agreed to take over the library and conduct all of its business on a better financial footing for a trial period of three years. This move was successful, and the County Society was given full title in November, 1912. Since 1909, your library has steadily grown in size and efficiency, more journals have been taken and bound, more gaps in the older files of periodicals filled, and housing was obtained in a large building devoted to physicians. In 1914, \$3,600 was contributed for the purchase of books and journals, many files were completed, reference facilities were improved, and a new section of nearly 700 volumes on the history and literature of medicine was created. Attendance jumped from one, two, three a day to twenty or thirty, so that the Metropolitan Realty Company, which had given the library free quarters since 1911, agreed to erect an adjoining building, with the ground floor as your library and meeting hall. In the spring of

1916, the members of the Association pledged more than \$6,000 for its equipment, and what you have today is the result. You have now some 17,000 volumes, an endowment fund of \$11,000, an excellent librarian, stacks, tables, desks, files and other appointments in steel, a meeting hall seating 210 persons, with a booth for lantern and motion pictures. No other medical library of the same size can make a better showing than this, and you are to be congratulated on the public spirit and self-sacrificing labors of such men as Dr. Sewall, Dr. Spivak and others who have made all this possible. The Denver journal "Medical Libraries", which was carried through the years 1898 to 1902 by the sportsmanlike devotion of Dr. Charles D. Spivak, was the first periodical to be devoted exclusively to medical library administration, had great influence upon the founding of new medical libraries in this country, and, through its successor the Bulletin of the Association of Medical Librarians (1902), was the remote ancestor of our present Bulletin of the Medical Library Association (1911).

And now a few words about one who did more than any other man to improve the resources of medical literature and to further the origin and growth of medical libraries in this country, our old chief Dr. Billings. He came out of the Middle West to serve his country as Army surgeon, and came from field service in the Army to administer the Library of the Surgeon General's office, which is known to you all as being, next to the great Library of the Paris Medical Faculty, the largest in the world. He was every inch a soldier, straight as an arrow in youth, a strong, commanding-looking figure in his prime, with all the true soldier's contempt for difficulties and obstacles, with all the western man's capacity for working at a tremendous pace, always resolute, always cheerful, always manly, never complaining, never repining, wonderfully accurate in perception of things, capable of inspiring others with the utmost confidence in himself and of increasing their own self-confidence. To serve with such a man was a privilege, to be associated with him in any way was a liberal education. To know him, to see him in action,

was to feel that this was the captain of the ship, the man in whom we desired to place our trust, and this feeling was shared by hundreds who knew him, at home and abroad. He never interfered with his assistants, leaving them, after a few general directions, to develop their work of their own motion and according to their own devices. If they failed to do so, they were remorselessly dropped, but that was all. The lesson of his life was that it is better to have your future in front of you than, as Heine said of an unfortunate poet, behind you. To American medicine, Billings held out this message of hope, with which, as appropriate to the occasion, I venture to conclude:

"The defects in American medicine are much the same as those observed in other branches of science in this country, and to a great extent are due to the same causes.

"Culture, to flourish, requires appreciation and sympathy, to such an extent, at least, that its utterances shall not seem to its audience as if in an unknown tongue.

"We have no reason to boast or be ashamed of what we have thus far accomplished; it has been but a little while since we have been furnished with the means of investigation needed to give our observations that accuracy and precision which alone can entitle medicine to a place among the sciences properly so-called; and we may begin the new century in the hope and belief that to us applies the bright side of the maxim of Cousin, 'It is better to have a future than a past'."

FASTING.*

C. D. SPIVAK, M. D., DENVER.

Prophylactic and Therapeutic Rest.

Among the remedial measures which I use in my practice, rest always occupied the place of honor.

Permit me to present the following thoughts on the subject of rest:

Rest in its most comprehensive sense is the antithesis of action. Life is action, but action is made possible by the period of rest

during which the spent energies are renovated. All our organs, both vegetative and animal, manifest periods of action and repose alternately; some are absolutely rhythmic, as the circulation of the blood; others are only intermittent, as the secretions and excretions.

Rest not only prevents the further breaking down of tissues, but affords a chance for the tissues to store up new energy. The interval between the manifestations of animal and vegetable life can therefore be defined as nature's prophylactic rest.

In the ordinary life of a normal individual, the periods of activity and prophylactic rest are constants, and are balanced unnoticed and unobserved. But as soon as the balance between the two is disturbed, the equilibrium can only be reestablished by making up the deficit. The greater the activity that produced certain abnormal phenomena the longer must be the rest, and vice versa. The length of time which is required by nature for the repair of an injury must be in proportion to the severity of the injury, and the more severe the injury the longer time is required for the perfect recovery of the disturbed functions. A heart, for example, that worked for one month at a rate of twenty beats per minute over and above the normal will, mathematically speaking, require an amount of rest equal to 864,000 heart strokes (twenty beats multiplied by sixty minutes multiplied by twenty-four hours multiplied by thirty days). The meaning of such a theoretic formula is: The overworked heart in order to regain its normal equilibrium must use an amount of rest proportionate to the amount of the extra work performed. To use a homely example, a man working six days a week requires one day of rest. A man working twelve days consecutively must have at least two days of rest. Rest in such cases becomes a therapeutic agent.

Surgeons and Neurologists Advocate Rest.

Prehistoric man, I am sure, did not know of the terms prophylaxis, therapeutics, metabolism, energy, etc., and yet rest was his chief, and for a long time his only, remedy. Nature insisted upon it, "even to the extent

*Read at the annual meeting of the Colorado State Medical Society, September 5, 6 and 7, 1916.

of inflicting a twinge of pain on such as disobeyed her precepts". And notwithstanding the fact that the beneficent action of rest is so obvious, and may be said to be inherent and instinctive, so much so that even animals employ it as a therapeutic agent in surgical as well as medical cases, yet it was only in the seventies of the last century that the first word was spoken in the elucidation of the question of rest. I refer to the classic lectures of John Hilton on "Rest and Pain" (1863). The surgeon was the first to recognize the value of rest. Fifteen years later the neurologist followed and sang the praises of nature's greatest *materia medica*. It was our own Weir Mitchell who elaborated in his work "Rest in the Treatment of Nerve Disorders" (1878), a cure that bears his name, the brilliant results of which made its author known wherever medicine is practiced. Since that time it seems as if the surgeon, the neurologist and the enthusiasts who call themselves hygienists have monopolized "rest". In our day of multiplicity of drugs, patent and proprietary, legitimate and illegitimate, of nostrum and specific, serums and vaccines, when a patient presents himself, and the diagnosis is made, the first question is: "Which of the thousand and one foreign bodies shall I introduce into the body of the patient, by mouth, rectum, skin, veins, etc.?" The surgeon thinks first of all of rest. The neurologist tries to secure rest. The physician alone uses the pharmacopeia first, last and all the time.

Rest a Neglected Factor.

Eighteen years ago, at the annual meeting of the American Medical Association which was held in Denver, I read a paper entitled "Rest a Neglected Factor in the Treatment of Gastro-intestinal Diseases". In that article (Journal American Medical Association, July 30, 1898) I said: "I employ rest, nature's greatest panacea, as my first and best weapon against the greatest foe of mankind—diseases of the gastro-intestinal tract." I came to adopt this method through the following reasoning: I take it for granted that the organs comprising the gastro-intestinal tract are morphologically speaking analogous to the other organs of the body; they

are made up of the same tissues, are subject to the same insults, and their mode of repair is identical with that in any other part of the body. There is no fundamental difference between the symptom-complex called neurasthenia and that symptom-complex called nervous dyspepsia, whatever these terms may mean. Why apply the rest-cure in the one and not in the other? I do not understand by what manner of reasoning one arrives at the conclusion that in the treatment of a painful limb, according to the maxim of Hilton, "the maximum of result is co-equal with minimum of disturbances", but that a painful stomach or painful intestine should not be accorded the same privileges. The only redeeming instance in the whole array of diseases to which the stomach is heir, and in which the rest-cure is recognized as the remedy par excellence, is ulcer of the stomach. The principle of the cure was laid down by Niemeyer, recommended by Ziemssen and especially elaborated by Leube. It is expressed by Ewald in the following words: "I know but one form of treatment which holds out prospects of success . . . and this is the rest-cure . . . by which the stomach is protected from all irritating factors as a broken bone is immobilized in plaster."

Now the surgeon does not draw a line of demarcation between an ulcerated, broken, bruised or simply inflamed limb. Rest is the treatment *sine qua non*. Go over in your mind the whole gamut of diseases of the stomach from a simple inflammation of the mucous membrane to solution of continuity, and you will find that the processes, both pathologic and reparative, are the same. Why then not apply among other things the same remedy? I have done so and nature has rewarded me most generously.

How can rest be applied to diseases of the stomach and intestine, will be asked. It is true you cannot put these organs in splints, but you can, by using one or all of the following methods, secure rest: 1. Rest in bed. 2. Diet. 3. Hot poultices.

Rest as Understood Eighteen Years Ago.

During the eighteen years that have elapsed, I am glad and thankful to state that

I have learned something more about the subject of rest as applied to gastro-intestinal diseases. In re-reading my article I can measure the advance I have made since those days. Let me quote the definition of the erstwhile rest-trinity of 1898 vintage:

"1. Rest in bed. In severe cases I follow the method of Weir Mitchell to the letter—absolute rest in bed. Sitting is not allowed under any circumstances. The bed pan is used.

"2. Diet. In many severe cases of gastro-intestinal disorders the best bill of fare is abstinence. One, two or even three days' fasting will do no harm in cases of ulcer, dyspepsias, and diarrheas of all kinds and varieties. Nutritive enemata can be employed in cases where a longer period of fasting is necessary. When food by the mouth is allowed it must be given in small quantities, no matter whether liquid or solid, and at regular intervals.

"3. Poultices. The poultices take the place of splints. They make the patient feel comfortable and keep him warm and at rest. In severe cases the poultices are applied constantly during the day for one and two weeks; in milder cases from four to eight hours daily."

A Change in the Definition of Rest.

Although I use all the three above mentioned measures even unto this day, I have changed my opinion regarding the relative importance of each and also changed the definition of rest as applied to the treatment of gastro-intestinal disorders.

Rest in bed is no longer regarded by me as essential to the treatment of all gastro-enterological cases, and therefore must not be placed, as I did eighteen years ago, at the head of the list. An entirely new definition is given to therapeutic rest as applicable to the digestive organs, namely the cessation or suppression of the digestive functions in the alimentary canal.

The mechanism of an animal has been likened to that of a machine, and generally the analogy holds good. When a machine is undergoing repairs the whole machine is brought to a standstill, or at least the part to be repaired is given absolute rest. So

must we do when we undertake to repair the digestive tract. The analogy of rest for a diseased organ which can be richly supplied from the domain of surgery can be made to stand out in bolder relief when we take one of the vital organs, as for example the lungs. The problem of immobilizing the diseased lung, of putting it at rest, was solved by the operation of pneumothorax. The diseased lung is collapsed, put at rest, and then given a chance to recuperate. The work of the diseased lung is performed by the other, the healthy lung. Were we able to perform the so-called miracles of the Yogi—which are no doubt physiological phenomena as yet unexplained and probably analogous to autosuggestion—we could, in case of bilateral affection of the lungs, suspend the functions of both lungs by throwing the man into hibernation, and by suspending animation perform the office for both lungs as pneumothorax does for one lung.

Fasting Is Rest for the Gastrointestinal Tract.

It is evident that no matter what the derangement of the gastro-intestinal tract may be, whether gastritis, hyperacidity, anacidity, ulcer of the stomach, of the small or of the large intestine, there is present an injury to the integrity of the organ and consequently it cannot perform its function efficiently. If such an organ is forced to do work which it cannot perform, this is just like the whipping of an exhausted horse. Every act performed adds insult to injury. The logical conclusion is that the stomach and intestines should be put at rest, should cease their normal functions until the repair is effected. In short, rest for the gastro-intestinal tract means the cessation of feeding, or in other words fasting.

Fasting as Practiced by Jews.

Fasting is as old as mankind. Religion is older than medicine. All religions observe fasts as well as feasts. The Hebrews fasted as preparation for a religious duty (Ex. xxxiv, 28; Dan. ix, 3 and x, 2) as an accompaniment and manifestation of mourning (I Sam. xxx, 13; II Sam. i, 12) and as an act of self-abnegation and humility (I Kings xxi, 28; Jos. xiv, 12; Neh. i, 4). The Bible prescribed only one fast, the tenth day of

Fishre, Yom Kippur, the Day of Atonement, but after the captivity four other obligatory fasts were established. These are the 17th day of Tamuz, the 9th day of Ab, the 10th day of Tebeth, and the Fast Gedaliah. All these fasts commemorate sad events in the life of the Jewish nation. The fast of Esther (13th of Adar) is commonly observed (Esth. ix, 31). During the centuries of exile the number of fasts grew to thirty, of which, for instance, the 10th of Nisan commemorates the death of Miriam the prophetess, the 1st of Ab the death of Aaron the priest, and the 7th of Adar the death of Moses (Aruk, Oraeh Chayim 540, 2). Besides the Mondays, Tuesdays and Thursdays following the Passover, Tabernacle and Purim holidays are considered fast days. Some pious Jews fast every Friday. Members of burial societies fast on the 7th of the month of Yiar. The anniversary of the death of one's father and mother (Jahrzeit) and the day of one's marriage are also observed as fasts. All fasts begin at sunrise and end with the appearance of the first stars of the evening, except that of the Day of Atonement, which lasts "from even till even". The Jewish fast implies complete abstinence from food and drink (The Jewish Encyclopedia, article Fasting).

Fasting as Practiced by Christians.

The Christians likened fasting to almsgiving and prayer as pleasing to God though not directly required by him. Fasting is an exercise of piety. Every personal misfortune induced a pious Christian to abstain from food and drink, and in general calamities the bishops appointed fast days.

The Catholics observe the following fast days in America: all the forty days of Lent; the Fridays of Advent, the Ember days, the vigils of Christmas and Pentecost, as well as those of the Assumption (14 August), and All Saints (31 October).

According to the church authorities, fasting essentially consists in eating but one full meal in twenty-four hours and that about midday. It also implies abstaining from flesh meat during the same period. Besides the complete meal the church permits a collation usually taken in the evening. Eight ounces of food are permitted at the collation.

Eggs, milk, butter, cheese and fish are prohibited, whilst bread, cake, fruit, herbs and vegetables are allowed. Finally, a little tea, coffee, chocolate or other such beverage together with a morsel of bread or cracker is allowed in the morning. Water, lemonade, soda water, ginger ale, wine, beer and similar drinks may be taken on fasting days outside meal time. All Fridays of the year are days of abstinence from flesh meat (The Catholic Encyclopedia, article Fasting).

Fasting in New England.

The pilgrim fathers on board ship Talbor consecrated the 21st day of May, 1629, as "a solemn fasting and humiliation to Almighty God as a furtherance of our present work", and a number of fasts are still observed in New England which trace their origin to the first settlers (W. DeLoss Love, The Fast and Thanksgiving Days of New England).

I have dwelt at some length on the historical aspect of fasting for the purpose of emphasizing the fact that fasting is not a fad and an innovation, that it has been practiced from time immemorial, and that frequent fasts as practiced by the Jews even to this day, averaging at least one day's fast every month of the year, have not impaired their mentality nor made them more liable to infections. The low mortality of the Jews is a well established fact, and there is no doubt that fasting, or as it is called in Hebrew "the affliction of the soul", has greatly contributed to the formation of their moral and physical characteristics.

Fasting as a Therapeutic Measure.

The attention of the medical profession has been drawn to fasting by the long continued fasts of Tanner, Cetti and others which have been studied by eminent authorities and the results of their observations reported.* The records of the early fasters have been beaten time and again by men and women who have undertaken fasts not for the sake of sport or pure scientific investigation, but for their therapeutic value, and have demonstrated beyond any doubt that voluntary

*Senator, Bericht über die Ergebnisse des an Cetti ausgeführten Hungerversuches, Berl. Klin. Woch. 1887, xxiv, p. 425; Lunciani, Das Hungern, 1903; Benedict, Studies from the National Nutritional Laboratory, Boston.

fasting for periods of twenty, thirty, forty and even ninety days is not only not injurious to the health but actually beneficial. The physicians, too, have become bolder and learned to prescribe long fasts in acute attacks of appendicitis and in peritonitis. Very frequently such cases are not fed for a week or a fortnight, without arousing any anxiety that the patient will die from starvation. The latest application of fasting as a therapeutic measure in diabetes has aroused the medical profession to the possibilities latent in abstinence from food.

S. O. S. of the Stomach.

Isn't the stomach of as much vital importance as the lungs and kidneys, it will be asked? The lungs and kidneys must work to keep up the life of the individual and so must also the stomach. Moreover these organs have the advantage over the stomach. Since there are two kidneys, therefore one can be dispensed with. Since there are two lungs one can be put out of commission without fatal results. But alas, there is only one stomach, and it is customary that three times a day some kind of slops shall be thrown into it, no matter whether the lining is inflamed, swollen or ulcerated, no matter whether the secretions are increased, diminished or absent, no matter whether the food escapes without giving the stomach a chance "to think it over", or whether the food remains there indefinitely to form a cesspool, no matter whether the stomach rejects the food by using the route of the up-heave or the down-slide. The stomach and the intestines give the proper signals of distress, the S. O. S.—Stop Ordering Slops—but the physician heeds not. He must needs prescribe a diet. Food is rammed into the stomach in accordance with the mistaken idea that a body with a diseased gastro-intestinal tract needs food and can digest it. It is the greatest fallacy of the medical profession of the present day. A diseased stomach cannot digest food and therefore the food introduced adds insult to injury, for the undigested food acts as a foreign body and as a splinter in the flesh. But how is the body nourished during the fasting period? To this we will give answer that our body is chock full of stomachs and these

stomachs can draw upon an internal larder which furnishes a plentiful supply of food. We will briefly outline the process:

It must be remembered that the tissues of an animal comprise two distinct classes. In the first class must be placed the living machinery of the body, generally composed of proteins. In the second class are the fatty tissues of the body which form no part of the ordinary machinery but function simply as a storehouse of material which can be utilized for the production of energy. During the period of fasting, the energy required for the maintenance of the temperature and the vital movements of respiration and circulation is derived from the oxidation of the tissues of the body and therefore there must be a constant and steady loss of weight. The experiments on man show that the average daily loss is about one pound. This loss of weight does not affect all parts of the body alike. One would think that the parts of the body which work most should show the greatest loss of weight. But the very reverse of this is the case. The organs which are most necessary for the maintenance of life, the heart, the lungs, the respiratory muscles, undergo but very little loss of weight. The brain and the nerves lose practically nothing of their substance. The fat, on the other hand, is drawn upon first, and during starvation ninety-seven per cent of the fat may be consumed. The animal organism in fasting deals with the resources of its bodily tissues with the utmost possible economy. The lower tissues are sacrificed for the maintenance of the higher tissues.

One sees, therefore, that the body can very well maintain itself on the reserve tissues, and that digestion, absorption and assimilation still go on. There is no fear of starving to death until the body has consumed every bit of fat and muscle and has reached the skeletal stage.

Fasting the Best Tonic.

From observations made by eminent men upon professional fasters, upon students, soldiers, and workmen, and from my own limited observations on patients and upon myself, it has been found that the process of fasting is not combined with pain or dis-

tress. During the first day or two there is a craving for food at meal time and one is haunted by the ghosts of beef steaks and turkeys. At the end of the second day or the beginning of the third day the desire for food may be entirely absent. Eventually a normal and healthy appetite comes and then the stomach and intestines are found in a condition to do their work efficiently. A patient of mine after a few days' fast said it was worth while fasting another five days for the enjoyment he had from his first "break-fast". It tasted better than anything he had ever eaten in his life. The esthetic epicurean of the future will differ from the modern glutton-epicurean in that the former will fast a day or two in order to experience the real joy of eating, and the other will stuff himself knowing and dreading the inevitable consequences which will follow in the wake of his conduct.

I shall not burden you with a recital of my cases. All I cared to do was to bring to your attention the therapeutic value of rest in gastro-intestinal disease and the fact that of all the forms of rest the most useful, because it is the most natural, is fasting.

205 Metropolitan Building.

DISCUSSION.

O. M. Gilbert, Boulder: I have not had much experience with fasting. According to the rules or irony of fate, as I came over here Sunday I was attacked with food poisoning which compelled me to keep very close to my room for three days and fast absolutely, so I am in a fit condition to discuss the doctor's paper.

I do not believe we have begun to realize the advantages of fasting through restricted periods. But there are limitations to fasting, and I am sorry Dr. Spivak did not go into these limitations. You can not keep up absolute fasting without limitations in any disease. Even in acute disease, the patient cannot always fast until she or he is well. Where ninety-seven per cent of the fat and muscle is gone, I think some of us might be afraid of slipping over the other three per cent and would not be willing to risk it. Just what these limitations are, I am sure we do not now know. Modern studies in metabolism and physiology would seem to show that there is some danger of going too far. If the body continues its activity, degenerative changes may occur. Degenerative change of the heart, for instance, may occur, and I think there has been a reaction on that account from the old Leube method of treatment of peptic ulcer. Long before the work of Sippey, I became convinced that in the Lenhartz plan we had a better method than the treatment by fasting, or the Leube method.

In the diet of typhoid fever cases we have

gone through both extremes; the pendulum has swung from one extreme to the other, and I am convinced it will swing back. In Dr. Frederick Shattuck's ward in the Massachusetts General Hospital I have seen typhoid patients fed considerable quantities of semi-solid food in the height of the disease. Coleman feeds them five thousand calories a day. Then we have had proposed the starvation treatment. So there you have the two extremes. There should be a happy medium, but the general principle of fasting has not been sufficiently recognized. Fasting is a great aid in acute diseases. We know that the body acts better when poorly nourished temporarily than when it is overnourished.

DIAGNOSIS OF MENSTRUAL REFLUX THROUGH THE TUBES.*

J. N. HALL, M. D., DENVER.

As an internist, I hesitate to present my first paper on a gynecological subject. My only excuse is that I can find so little mention in any of the current text books of the ante-operative diagnosis of the condition I am about to describe. It is one which the internist is more likely to meet with, probably, than the gynecologist, since the symptoms suggest some general abdominal affection rather than a strictly gynecological one. There is, of course, frequent reference to the accumulation of retained menstrual blood in the uterus and the tubes, the means of diagnosis and methods of treatment. The formation of a hematocoele from rupture of the tube, or the origin of a low grade septic peritonitis, or of symptoms of internal hemorrhage are mentioned. The gradual development of such symptoms as these cases presented, from reflux through a distended tube, without gross rupture, is not described in so definite a way as its importance would seem to call for.

My attention was first attracted to the subject about 1890.

Case 1. A girl of 15 presented symptoms so exactly similar to the ones mentioned in Case 2 that more than twenty years later I was able from the resemblance to make a tentative diagnosis, which was shown at the autopsy to be correct. Since I have no record of this case, and no operation nor post-mortem examination was performed, I can

*Read at the annual meeting of the Colorado State Medical Society, September 5, 6 and 7, 1916.

only say that I presume the case was of the same nature as the two subsequent cases proved by autopsy or operation. In any event, it was the source of the proper diagnosis in the later cases. In this first case I believe that hemorrhage overshadowed infection as the cause of death.

Case 2. A girl of 15 was admitted to St. Joseph's Hospital moribund, and seen at once by Dr. Leonard Freeman and myself. She had never menstruated. She was in collapse, with a slightly distended abdomen, with more or less uniform tenderness and rigidity, and a small amount of fluid in the abdomen. There was a history of cramping pain and vomiting, a rise of temperature to about 100 degrees, a very rapid and feeble pulse, pallor and collapse, with death after about forty-eight hours. The urine was not obtained. The chest was negative. The diffuseness of the abdominal signs, the lack of definite tenderness at the site of the appendix, the absence of a history of digestive symptoms, and the evidence of internal hemorrhage as shown by pallor, collapse, rapid, feeble, running pulse, and fluid in the abdomen, led me to suggest to Dr. Freeman that it might well be a case of reflux from the Fallopian tube in an attempt at menstruation, with obstruction which prevented the normal flow. (I quoted my previous case to him at the time.)

At the post-mortem examination we found the belly half filled with tarry blood, and the leaking tip of the tube was easily identified. The hymen was not imperforate, as we anticipated, but an obstructive closure existed high in the vagina. The upper vagina, uterus and tubes were distended with blood of the same character as that in the abdomen. We were unable to say whether the obstruction was developmental or cicatricial in character, but in the absence of any history I believe it to have been of the former nature. The autopsy was negative beyond the features mentioned.

In this case the infectious element predominated over the hemorrhagic one in the symptomatology.

Case 3. In this case we were able to make the diagnosis, to send the patient to the hospital against violent opposition, to operate

successfully and to fully restore the patient to health. The parents were ignorant foreigners, and would not listen to the proposal to make a vaginal examination, so that the diagnosis was confirmed from above at the time of operation. The work was then suspended a few minutes while we secured permission to complete it from below.

The girl was 14 years and 3 months of age, and well developed. She had never menstruated. Dr. T. J. Danahey, finding the abdomen painful, tender and distended, asked me to examine her, stating that the case suggested an acute appendicitis, but was not at all typical, so that he hesitated to make the diagnosis or send her to the hospital for operation.

She had had for thirty-six hours violent cramping pain, from her description apparently not digestive in origin, in the lower abdomen. There were present a temperature running up to 102 degrees, a pulse rate of 120, vomiting, and at certain intervals more of collapse than is commonly noted in appendicitis except after perforation. The face suggested by its pallor and anxiety a moderate internal hemorrhage. The extremities were cold. Fluid was definitely made out in the abdomen. There were present great rigidity and tenderness over the whole lower abdomen, but no localizing signs. From the girl's youth, and the absence of menstruation, tubal pregnancy was thought very improbable, and a definite diagnosis was made of reflux from the tube, with obstruction below.

After much trouble and excitement, with absolute refusal of permission for a vaginal examination, she was sent to St. Joseph's hospital. The white count was found to be 10,500. Dr. McGraw and Dr. Danahey operated immediately.

Upon finding the lower abdomen full of tarry blood, they discovered the leaking point at the tip of the left tube. The right orifice was also open. The tubes, uterus and upper vagina were distended, the whole being movable as one mass. Permission was now obtained to examine from below. The vagina was found closed one inch above the hymen, but it appeared to be merely an adhesive closure, since Dr. McGraw was able

to separate the vaginal walls without seriously tearing the mucous membrane, much as an adherent prepuce can be separated from the glans.

About six ounces of tarry blood was evacuated, with a much greater quantity free in the abdomen. A right ovarian cyst of the size of an egg was removed. Drainage was inserted and the recovery was uneventful.

In this case the symptoms seem to have been fairly divided—those due to hemorrhage and those coming from the infection seeming equally important.

I am much indebted to Dr. Danahey for his prompt recognition of the fact that some unusual condition was present and for his skill and tact in inducing the parents to permit prompt operation; also to Dr. McGraw for his timely and skillful assistance.

To summarize briefly, the diagnosis is practically that of a ruptured tubal pregnancy, but in a girl at or soon after the age at which menstruation should occur, but in whom it has failed to appear. The entire picture is toned down, however, for there are less violent pain, less sudden and violent collapse, less of free blood in the abdominal cavity and absence of the history of the irregular, dribbling menstrual flow. A septic peritonitis of low grade may also be present.

If vaginal or rectal examination is performed there should be no difficulty in making the diagnosis. The treatment is obvious. Some twenty leading textbooks in this line fail to mention the matter except to say in a line or two that "perforation of the tube may occur," or "occasionally the tube ruptures from over-distention, giving rise to a pelvic hematocoele". No hint as to the possibility of pre-operative diagnosis of such slow leakage as occurred in our cases is given. Hirst states: "Perforation may occur into the peritoneal cavity, either by a laceration of the tubal walls, or by rupture of the uterus above its peritoneal attachment. This accident is usually followed by the rapid development of septic peritonitis."

Pozzi mentions the possibility of colicky pain from reflux through the tube, but gives but little of the symptomatology.

From the Crerar Library I obtained an abstract of the recent article by Axel Week-

man, "New Observations of Atresia with Retention of Menstrual Blood", but in his seventeen cases there is no suggestion of leakage into the abdomen in any instance, hence none of the diagnosis.

I believe that with care the diagnosis of hemosalpinx profluentis is possible. The diagnosis, if made, should lead to earlier and more successful operative intervention than could otherwise be expected. The more sudden and spectacular instances of rupture of the tube, with instant initiation of severe symptoms, are probably much more frequent and more easily recognized.

My thanks are due to Dr. W. A. Jayne for much assistance and support in the preparation of this paper.

452 Metropolitan Building.

DISCUSSION.

W. A. Jayne, Denver: I think Dr. Hall needs make no apology for entering the field of gynecology, since he has been so successful in his first attempt.

The cases which he has presented to you are exceedingly interesting because of their extreme rarity. They are not common in the experience of any one man or of any specialist, but they are commonly reported in gynecological literature and are very well recognized.

The diagnosis of the condition before rupture into the peritoneal cavity is not a particularly difficult one, especially if we remember that in virgins the most successful pelvic examinations are made under an anesthetic and by the rectum. A vaginal examination in a virgin except under an anesthetic is not satisfactory, and the finger cannot be introduced into the pelvis by the vagina nearly so far as it can be by the rectum. The development of such a tumor is the result of congenital or artificial atresia behind which the menstrual fluid collects from month to month; ultimately forming a large tumor which may be determined by a rectal better than by a vaginal examination. The absence of menstruation in a young girl, the formation of a tumor in the hypogastrium and the rectal examination should give us definite suggestions for the correct diagnosis. But Dr. Hall's cases are those that have gone very far and in which there has been neglect on the part of the patients' parents to recognize the absence of menstruation and investigate the local conditions. There is such a large accumulation of blood at times in these cases and the tension is so great that the Fallopian tubes are materially dilated and distend into the abdomen. In these cases it often becomes a condition for study by the internist as well as by the gynecologist. While the condition is of gynecological origin, it may easily remain for the internist to make the diagnosis, and I congratulate Dr. Hall on the acuteness of his observations and the accuracy of his conclusions in the gynecological field, which simply bears out the reputation which he has always held among us.

J. N. Hall, Denver (closing): I merely wish to say, Mr. President, that before I decided to pre-

sent this paper I consulted Dr. Jayne, and after finding references in the literature of the subject and receiving the backing of Dr. Jayne, I decided to present to you a gynecological paper, and its presentation is due very largely to Dr. Jayne, to whom I owe my thanks.

INFECTIONS OF THE SEMINAL VESICLES.*

WM. M. SPITZER, M.D., F.A.C.S., DENVER.

In the time allotted, a glance over the subject of this paper is all that is possible, and the writer desires only to call your attention to this extremely common but important diseased condition, with the hope that he may arouse your interest therein.

For a clear understanding of the pathology of these organs and the diseased conditions in other organs resultant therefrom, a concise description and a few words on the topographical anatomy are indispensable.

The vesicle is a paired organ, whose function is the storage of semen, which is carried to it from the testicle by means of a duct, the vas deferens. Just before the vas joins the vesicle, it becomes dilated, this dilatation being called the ampulla of the vas. The ampulla and the vesicle empty their contents into the urethra by way of the ejaculatory duct, which latter lies within the body of the prostate gland.

The vesicle and the ampulla lie on the posterior inferior wall of the bladder, attached to each other, to their fellows of the opposite side, and to the urinary bladder, by rather firm connective tissue. Posteriorly, they are encapsulated by the middle layer of the fascia of Denonvilliers, which extends downward on the posterior or inferior surface of the ejaculatory ducts to and into the prostate. Anteriorly their capsule is completed by the anterior layer of this same fascia, which extends downward to the beginning of the ejaculatory ducts. These two layers unite with each other on the lateral borders.

Some practical anatomic facts which concern us are:

1. The mouths of the ejaculatory ducts are the narrowest parts of the genital canals.

2. There are sphincter muscles at the mouths of the ejaculatory ducts where they open into the urethra.

3. To the exploring finger in the rectum, the vesicles seem to be an incorporated part of the prostatic mass.

4. The entire mass (prostate, vesicles and vasa deferentia) is intrapelvic, that is to say it lies above or within the urogenital diaphragm.

5. To enter the bladder, the ureters, following the posterior wall of the bladder, pass between that organ and the vesicles.

As to the intrinsic anatomy of the vesicle; it is a hollow viscus with an outer fibrous coat, a middle muscular coat composed of three layers of muscle fibres (circular, longitudinal and oblique) and an inner coat of mucous membrane. Our difficulty in handling infections of the vesicles lies with (1) the arrangement of the mucous membrane lining them and (2) the inaccessibility of these organs.

If a longitudinal cross section of the vesicle be made, instead of appearing as a hollow organ it seems to be constructed of a number of vacuoles each completely walled off from its neighbor. This is a deception, as there is really but one long canal, with numerous diverticulae, so twisted as to produce this appearance.

It is apparent from the description that this bladder must have more lining mucous membrane and be more poorly disposed for surgical drainage than any other hollow viscus of the body; and this is so.

At the International Congress of Medicine, Urologic Section, London, 1913, Rudolph Pickert† of Budapest showed 72 specimens of these organs, 56 of which he accounted normal and 16 pathologic.

He divided them, rather arbitrarily, into 5 types as follows:

- A. Simple straight tubes.
- B. Thick, twisted tubes with or without diverticulae.

*Read at the annual meeting of the Colorado State Medical Society, September 5, 6 and 7, 1916.

†International Congress of Medicine, Sections XIII-XIV, London, 1913. "The Anatomical Configuration of the Human Vesicula Seminalis in Relation to the Clinical Features of Spermatocystitis".

C. Thin twisted tubes with or without diverticulæ.

D. Main tube, straight or twisted, with larger grape-like arranged diverticulæ.

E. Short main tube with larger irregular ramified branches.

The symptoms of spermatoecystitis may be placed under four headings, as follows: nervous, sexual, urinary and constitutional symptoms.

The nervous symptoms are melancholia, extreme mental depression, and headache. They are mentioned particularly to give the writer an opportunity to state that he believes that this disease is the cause of many suicides.

The sexual symptoms are painful ejaculations, premature ejaculations (due, however, more to the accompanying posterior urethritis), excessive desire, and frequent, painful, long-lasting erections in the acute stage, sloping down to a gradual inability to obtain erection, with, of course, impotence from that cause. Impotence because the spermatozoa may be dead, or impotence because the delicate reaction which must be maintained for the vehicle which carries the spermatozoa is changed, and they do not live long enough to impregnate the female. Recurrent epididymitis is common, each attack being as a rule lighter than its predecessor, and is caused by a drainage of the infected vesicular contents into the epididymis. After numerous recurrent attacks of epididymitis on each side, impotence (permanent) is assured because of complete stricture of the canal. No doubt most childless marriages in which the male is responsible are due to this cause. Spermatorrhea, manifest particularly at stool, is frequent.

Very common among the sexual symptoms is a urethral discharge, persistent and unrelievable, or else very easily relieved and very quick to return. For this alone, the patient very often consults the surgeon, and the rest of the symptoms must frequently be elicited by questioning. This is called "chronic clap", or if the discharge is less in volume "gleet".

The cause of its intermittency will be explained under the urinary symptoms.

The urinary symptoms depend on which

portion of the urinary tract is impinged upon, and on the stage of the spermatoecystitis. The vesicles, lying on the outside of the bladder floor, when acutely distended press on the trigone, thus producing a frequent desire to urinate; and because the infection travels by contiguity through vesicular and bladder wall, a cystitis with urgency, frequency and purulent urine is common. This same condition, however, is also produced in a different fashion, as follows: Where there is no direct extension of infection by contiguity, infection of the posterior urethra and bladder are brought about by a discharge of the infected vesicular contents into the posterior urethra with resulting pyuria and bacteriuria, and at first with the symptoms of cystitis.

The infection of bladder and posterior urethra cures itself in a few days, and the urine may remain clear for a short time; but another discharge of the vesicular contents into the urethra reproduces the symptoms, which again clear up; after this has occurred often enough, the symptoms of cystitis during these attacks no longer appear, the trouble being manifest only by the pyuria and bacteriuria.

In the extremely acute form of spermatoecystitis, usually occurring between the 16th and 25th day of acute gonorrhea, the onset is characterized by frequency, tenesmus, burning and terminal bleeding (all due, of course, to the posterior urethritis in part) and oftentimes by inability to urinate. This retention demands catheterization. A rectal examination now discloses, either on one side or both, a large, bulging, hot, prostatic mass, heretofore diagnosed as prostatic abscess. After a few days, as a rule, this abscess ruptures into (1) the urethra, (2) the rectum or (3) the skin of the perineum, in the order named as to frequency. *This is not a prostatic abscess*, but on the contrary, is always a vesicular abscess, due to the closure of the ejaculatory ducts in the presence of pus in the vesicle, and is an extremely dangerous illness, resulting on rather rare occasions in death from general peritonitis, or from general sepsis.

Hydronephrosis, intermittent or chronic, replaced at times by pyonephrosis, and pyelitis are complications of spermato-cystitis

and present their own urinary symptoms. They are caused by stricture of the ureter 2 cm. from the ureter mouth, at the place where it comes in contact with the vesicle. These strictures are the result of ureteritis, an inflammatory process coming from the perivesiculitis by extension.

The urines, first, second, third, fourth and fifth, when a 5 glass test is made, are all about equally purulent. At times the urine clears up, but just when one feels encouraged again becomes cloudy.

In the acute and early sub-acute stages, the gonococcus may be recovered from the urine in those cases where it was the infecting agent; this organism later gives way to the streptococcus and staphylococcus, or to other organisms which commonly inhabit the urethra. In the extremely chronic cases the colon bacillus is found most frequently.

The constitutional symptoms, if I may so term them, are endocarditis, myocarditis, myositis in various locations and so-called "gonorrheal rheumatism" or gonorrheal arthritis.

I would not infer that any of these symptoms are peculiar to this disease, nor that any of them must be present, nor even that many are to be found in a given case; I do, however, feel it my duty to mention them all, despite the fact that I, personally, place more weight on a small number of physical findings than on much symptomatology.

What is the cause of this condition? How is it brought about? It is always an infection occurring in one of four ways, either as an extension from a posterior urethritis, as a hematogenous infection, by way of the lymphatics from the kidney or the epididymis, or through the vas from the latter. Therefore anything that causes a posterior urethritis may cause an extension, a vesiculitis; and it is well to remember that while clap is the most frequent cause of posterior urethritis, other things, such as perverse sexual life, excessive venery, withdrawal, and extreme prolongation of the sexual act, may be responsible.

An illustration of the hematogenous infection is tuberculosis of the vesicle in the absence of kidney or epididymal infections; and in tuberculosis of the epididymis, the

vesicle is always tuberculous. Which precedes the other I do not know, but I think the vesicle is first affected.

How common the affection is may be judged from the frequency of epididymitis. In gonorrhea, epididymitis occurs in at least five per cent of all cases, and there is always a vesiculitis present. Also vesiculitis may and does occur in a number of cases in which the epididymis is not affected.

One word as to the pathology. At first only the mucous membrane is inflamed, but as the microorganisms invade the walls more deeply, the muscular coat is involved with the usual changes found in myositis anywhere, and, the outer fibrous coat becoming affected, a perivesiculitis is brought about. This perivesiculitis carries with it many possibilities.

The various symptoms and various diseases above mentioned may be cleared up, and are cleared up, when the source of infection from which they emanate, i. e. the vesicle, is rendered free from germ life. This explains why certain cases of gonorrheal rheumatism, for instance, clear up promptly, while in others it cripples the patient permanently.

As to treatment, I must confess that there is no uniform method, which is equivalent to a confession that in this respect we have not gone very far.

To Eugene Fuller of New York must be given the credit of first calling the attention of the medical world to the fact that infections of these organs, which up to that time (1893) were not recognized (the symptoms above described being attributed to prostatitis), were fairly common, and of advocating stripping as a means of cure. He also called attention to the fact that they were practically always responsible for "gonorrheal arthritides", and still later, 1901, he described a method of draining the organ surgically, calling his operation "vesiculotomy". Since that time he has written considerably on the same subject.

Many of these cases go on to resolution automatically. Of those which do not, consistent, properly performed stripping of the vesicle will clear up another large percentage, and the disease will not recur if all the other lesions in the genito-urinary tract are at the

same time cured. There still remains a fair percentage that will not clear up.

A few years ago, Belfield reported cures in a large portion of these incurable cases by lavage of the vesicle with collargol, a colloidal silver, but these statistics were not concurred in to the same extent by other urologists. My records show two persistent cases cured in this way, out of 14 attempts. It seems that a simple lavage cannot accomplish much with a diseased mucous membrane; but when it is remembered that some of the drug remains in the vesicle for a couple of days, it will be seen that at least much good may be accomplished.

Stripping the vesicles consistently and properly cures some cases; injection of the vesicle, it is claimed, cures some that do not give way to stripping; and what vesiculotomy or drainage of the vesicles will do remains to be seen. This is the field in which the urologist admits impotence in some cases, but to his credit be it said that he is busily engaged with the problem.

928 Metropolitan Building.

DISCUSSION.

Oliver Lyons, Denver: No one who aspires to become a successful and safe genito-urinary surgeon can afford, I am sure, to neglect to study very carefully and completely this very important subject, for this disease brings in its train other and more serious complications which are a source of difficulty to the surgeon, and misery to the patient. We are awakening to the fact that men as well as women may be victims of nervous symptoms from toxic irritation by a lesion in the organs of generation.

We have three distinct varieties of infection of the seminal vesicles—pyogenic, gonococcal and tuberculous infections. The route of infection may be through any of the four paths mentioned by Dr. Spitzer.

The differential diagnosis, especially in the early stages, is difficult, and a little mismanagement at this time may breed a good deal of mischief.

The symptomatology of seminal vesiculitis is very voluminous. The varied symptoms are due to the anatomical proximity of the vesicles to the ureter, to the bladder, to the peritoneum and its nerve supply. As Dr. Spitzer said, this disease probably has no distinct entity, but is frequently accompanied with prostatitis or posterior urethritis. The groupings that he has given us in these cases fit in with the clinical findings. For instance, owing to the anatomical proximity of the vesicles to the bladder we shall frequently find in our routine cystoscopic examinations the mucous membrane of the bladder which covers the vesicles to be hyperemic and edematous. In fact, we have here a mild trigonitis; this in all likelihood will give rise to frequent, painful, urgent

urination, and in the acute cases perhaps complete retention of urine. In many of the chronic or subacute cases it is not uncommon to see these patients carrying from two to four ounces of residual urine. These cases are also accompanied by the usual typical mucopurulent discharge, and sometimes the patient will have a perfectly clear, sparkling urine, the only abnormality being perhaps a reaction for albumin. This is a class of cases that is frequently rejected for life insurance examinations.

As to the nervous symptoms that the essayist spoke of, these cases will have a uniform history to relate, either after an acute urethritis or perhaps following obstinate, prolonged gleet. They will complain of suprapubic pain of a burning, throbbing character; perhaps of pain in the back, in the sacral region radiating down the thighs, sensitive and painful testicles, with an obscure pain somewhere in the urethra which they are unable to locate. These patients are almost always conscious of the fact that the pain they have originates and starts from the perineum, and as time goes on this pain gradually increases. These patients will tell you that the remedies that once gave them relief are no longer of any avail. This pain like all other pain has its periods of exacerbation, but eventually the persistency, the location and the consciousness of the origin frets, depresses and irritates the patient and absorbs his thoughts until he becomes incapable of mental and physical exertion. These are the patients that become male hysterics—a burden to themselves and to those around them. On examination of such a case we find the prostate and vesicles matted together in one composite mass of inflammatory tissue, with hardly a vestige of the normal landmarks remaining. In view of the intimate relationship existing between the nerve supply of the prostate and vesicles and that of other abdominal organs, the reflex pains complained of by these patients are easily accounted for.

Sexual symptoms. The vesicles are anatomically placed in the path of the sexual nerve stimuli, both peripheral and central, and may through emotional activity become congested and fall a prey to infectious organisms lurking around the genito-urinary tract, with the result that in the beginning these patients' sexual desire is stimulated, with frequent ejaculations and prolonged erections, but as time goes on sexual desire begins to abate until finally there is absolute loss of erection. These patients then begin to think a good deal of their health and a good deal of their infection, and considerably more of their sexual life, until the whole thing plays havoc with their general health.

It is not difficult for us to account for many cases of systemic infection from the seminal vesicles, with our knowledge of the anatomy of the vesicles and with the poor drainage. We know that these sacs will harbor infection for many years and give rise to an occasional autoinfection, the infected material being scattered into the general circulation and carried to the synovial and other membranes, whose weakness to infections is well recognized, and in which their presence is manifested by the different myalgias and arthralgias. Furthermore, another functional result will sooner or later occur, namely sterility, either from obstruction of the ejaculatory ducts, or from the change that takes place in the prostatic and vesical fluid.

Just a word or two as to treatment. As Dr. Spitzer has told you, some of these cases resolve

and return to their normal condition by the usual antiphlogistic treatment, such as rest in bed and hot applications. Some of the cases are not so tolerant and some can be benefited by massage of the vesicles. Others, especially those of the sclerotic type, and those that have occurred from a perivesiculitis, require some surgical treatment.

I think probably Lloyd was the first man who attempted to do vesiculotomy. This was in 1889. This was followed in a few years by vesiculotomy by Ullman, but it was Fuller of New York who later popularized this operation. Some of the cases can be benefited and others can not. The operation is problematic. It looks like a brutal operation, and must not be looked upon as a simple affair, but it is the only thing to do for many of these cases.

My experience with the operation has been in the suppurative type: It is a simple matter to drain, but in the sclerotic type or hard vesicle, I do not know of any operation that is so difficult as a vesiculectomy. When the operation is attempted, one may expect to spend considerable time in the effort to remove the vesicle without getting into the rectum and bladder. Some cases, on the other hand, are very much like a prostatectomy, in that the vesicles seem to shell out of their capsule.

As to Belfield's operation of vasotomy, it occurs to me that it is the best operative procedure in these recurrent cases of epididymitis. In these cases ordinarily, the vas deferens is open and it is not a difficult thing to get the injection in. As Dr. Spitzer has said, the collargol or argyrol remains for many days.

I might relate an experience I had some six or seven years ago with argyrol injected into the vas. In those days—or in the early days—I kept the vas open for eight or ten days with a piece of silkworm gut, and injected it about every other day. This case held an enormous amount of argyrol, and I found out after a few injections, that the patient would urinate most of the argyrol in the first urination, and he had an emission for two nights afterward, which concerned him very much for fear if any children should happen about that time, whether or not they would be white or black.

D. F. McConnell, Colorado Springs: Some years ago at the meeting of the state medical society in Denver I reported eleven cases of tuberculosis of the seminal vesicles, and I thought it might be of interest to say something today about tuberculosis of the seminal vesicles or tuberculous seminal vesiculitis. I had these eleven cases under observation for a period ranging from five to ten years, and six of them had pulmonary symptoms and five were without pulmonary symptoms. Since that time I have seen four other cases of tuberculosis of the seminal vesicles.

The plea I would make is in regard to Fuller's method of stripping the seminal vesicles. I think it is extremely hazardous in tuberculous seminal vesiculitis because of the danger of setting up new infection and the spreading of the infection already established. To the rectal feel after the stripping, there is an increased tenderness as well as enlargement. I recollect one case a year or two ago in which the diagnosis was not clear, and the guinea pig test was negative, in which the first symptom disclosed in a routine examination was pus in the urine. I find that pus in the urine without other symptoms, extending over a considerable time, is extremely significant of tuberculous infection of the seminal vesicle. The patient

came back on the fifth day complaining of considerable soreness; to the rectal feel the lesion was the size of a small pigeon's egg. The mass seemed to extend well into the prostate, and there was a distinct tubercularization, as it were, of the mass. Stripping had been utilized some time previous to this, and I think that undoubtedly set up an increase of the inflammatory condition in the vesicles, so that I think stripping is distinctly contraindicated in the treatment of tuberculous seminal vesiculitis. Five of these patients have done extremely well. The only treatment utilized has been the routine hygienic, open air treatment plus tuberculin. It is my opinion that tuberculin is extremely valuable in the treatment of tuberculous seminal vesiculitis. I have seen remarkable improvement in these patients. In four of the eleven cases the epididymis was not involved, and even in those cases where the vas was involved it was distinctly a nodulated mass, and the exhibition of tuberculin was so patently favorable as to convince me of its distinct value in the treatment of this condition.

William M. Spitzer, Denver (closing): I do not rise to differ with a single statement that has been made; in fact, I feel that every statement that has been made is correct, and men who know the subject of seminal vesiculitis thoroughly could talk for a week and never make a statement that is incorrect.

The subject is a comparatively new one to us, and as Dr. Lyons has pointed out, Dr. Samuel Lloyd and Dr. Fuller together were the first to do vesiculotomy. I saw them do it and was afraid to do it. I am still afraid to try it as they did it. Fuller makes a big incision in the perineum, gets down upon the central tendon, introduces a finger on either side and feels the mass, introduces the knife into the mass and cuts. He cuts from side to side; he does not cut the bladder and rectum, and the reason is that he operates mostly on cases with big vesicles, big abscesses of the vesicles, and he can feel and get to them, and the bladder and the rectum are a little farther apart. We are not going to stop at this surgery, we are going to open and drain these vesicles before they get into that stage. It looks like a brutal operation. Although simple to you, the matter is of vital importance to the patient. The patient wants to be well or dead. It is really pathetic how these patients describe their troubles in the vas to you, and something must be done for these individuals. What we want to do is to open and drain these vesicles before they reach the stage of abscess formation. Our work is difficult, and it is an operation which not many men will undertake. He who undertakes it, knowing exactly what he is doing, knowing his pathology and anatomy, will continue to do it, and I am convinced that in the course of time we shall be able to do this operation with comparative ease. But if it is undertaken by the general surgeon there are going to be many malpractice suits following it because the patient has to urinate through the rectum and defecate through his bladder, forgetting which is which, the rest of his natural life.

As to tuberculosis of the seminal vesicle, Dr. McConnell reported a number of cases a few years ago, and I remember it very well, but there are many, many more cases. I came upon reports of fifty cases of tuberculosis of the seminal vesicle, so that it is an extremely common condition. I have reference now to tuberculosis of the seminal vesicle as well as other infections. You all know

how common tuberculous epididymitis is. There is also tuberculous vesiculitis.

As to the method of diagnosis, this is not made by the symptoms, because many symptoms or any of them can be attributed to any disease of the genito-urinary system. The diagnosis is made by the physical findings. As I said in my paper I do not attach very much importance to the symptoms. What are the physical findings? Dr. Lyons has told us that there is trigonitis, and it is so distinct and stands out on either side so prominently that you can almost see the shape of the vesicle on either side with cystoscope in the bladder. The finger in the rectum helps us; the urine likewise helps us, and all findings help us to make out vesiculitis.

As to the treatment of seminal vesiculitis, I agree with Dr. McConnell in what he has said. Tuberculosis of the vesicle perhaps is not seen so frequently in the city as in the country, particularly perivesiculitis. In the country perivesiculitis is common. Those who resort to the use of the cystoscope every once in a while know that you cannot get a catheter into the ureter. We find nothing wrong with the kidneys. The reason the catheter sticks or is obstructed is because of the condition of the vesicle.

I have failed to mention vaccines, including tuberculin, in the treatment of any type of this affection. We pinned our faith to these things for many years with absolutely no results. Where we get results, we should have obtained the same results by leaving the patient entirely alone.

The subject was introduced to you prematurely. We must and shall continue our efforts to solve this problem, and eventually we shall arrive at some proper or exact method of treatment, or at least one method of treatment, which will result in a cure of these cases, and then I shall be glad to report to you the results.

TWO YEARS EXPERIENCE WITH MUCH'S TUBERCULIN IN THE TREATMENT OF TUBERCU- LOSIS.*

SALING SIMON, A.B., M.D., DENVER

No therapeutic agent has ever received, at the same time, so much commendation and condemnation as tuberculin. Tuberculin's fall into popular disrepute was due to its improper use by many misguided enthusiasts who employed it in large doses and in advanced cases of tuberculosis. For over ten years following this first era the advocates of tuberculin, mostly sanatorium physicians, were few; nevertheless, these few, firm in their conviction as to its efficiency, pleaded its cause at every favorable opportunity. The late Dr. Charles Denison of Denver was one of those who never wavered in his loyalty to tuberculin.

A second era in the use of tuberculin began with the work of Goetsch in Germany and Wright in England. The latter administered the remedy under the guidance of the opsonic index, holding that extremely small doses, when administered during the positive phase, were more efficient and devoid of all danger of reactions, and that harmful results were only obtained when tuberculin was given during the so-called 'negative phase'. The method of administering tuberculin in extremely small doses, guided by clinical symptoms, has continued to the present day. It has overlapped what we shall call "the third era of the moderate dose", whose principal advocates were Bandalier and Roepke in Germany. They take the middle ground between the initial era of the large dose and the second era of the extremely small dose. They advocate beginning with small doses and increasing as rapidly as possible; avoiding carefully the occurrence of reactions, they also emphasize strict individualization of dosage rather than generalization.

While there still exist differences of opinion among the users of tuberculin as to the method of employment, and while the subject of tuberculin is still somewhat hazy to the average practitioner, there is no doubt that its present-day use is more intelligent, and there is a better appreciation of its undoubted value as well as its shortcomings. This has been brought about by the conjoint labors of the clinician and the laboratory worker. On the other hand, it must be apparent that there are still many who deny that tuberculin has any therapeutic efficiency. Most of this iconoclasm is due to unfamiliarity with its proper use, and as often to the lack of necessary patience for its prolonged and persistent application.

Many attempts have been made to improve upon three original preparations introduced by Koch. As but few of these modifications showed any advantage over Koch's, a description or even an enumeration of all of them, in a short paper of this kind, is unnecessary. For a proper understanding of Much's partial antigens, the subject of this paper, a brief description of Koch's prepara-

*Read before the Medical Society of the City and County of Denver, April 13, 1916.

tions and their action upon the organism is essential.

Koch's original preparation of tuberculin, known as O.T., is prepared by using a four to six weeks old culture of tubercle bacilli, grown upon 5 per cent glycerine broth, filtered and the filtrate concentrated by heating to 1-10 of its original volume. From its method of preparation it will be seen that O.T. does not contain any of the bacillary bodies, only the soluble substances excreted by the tubercle bacilli into the glycerine broth. Hence it would appear that injections of this preparation for the purpose of active immunization would fail to accomplish the purpose, since it possesses only a small portion of the antigenic properties of the whole tubercle bacillus: besides, it contains foreign proteids of the broth which impart to the preparation poisonous qualities. That it lacks immunizing power is proven by its failure to protect animals from infection with the tubercle bacillus.

Koch recognized the shortcomings of the preparation, and next brought out his tuberculin residue "T.R." This was prepared by grinding a dried culture of tubercle bacilli in an agate mortar and stirring this in salt solution, then centrifuging the solution, which separated it into two layers. The lower layer, or residue, after extraction with glycerine he called "T.R." This preparation possessed more of the antigenic properties of the tubercle bacillus than the O.T., and hence he was more successful in immunizing animals with it, besides it is less toxic than is the O. T. Evidently, however, Koch was not entirely satisfied with this preparation, for he soon brought out his third preparation, the bacillary emulsion, which is prepared in a similar manner to the T.R. except that he did not centrifuge the comminuted bodies. Theoretically he now had all the bacillary components in his B.E. Animals were in some instances successfully immunized with this preparation. It is, however, after all only a suspension, similar in many respects to a vaccine of other pathogenic organisms, with this important difference, that the tubercle bacillus is a very complicated organism with a waxy or fatty envelope, and when introduced into the body

by injections does not readily give up its endotoxins. Again there is always a serious doubt whether the higher dilutions, in spite of assiduous shaking, contain the proper proportion of the original preparation. The bacillary bodies are mechanically ground, and no matter how fine the comminuted particles may be, they require to be acted upon by the blood through its digesting properties before the true antigens can be released, a rather uncertain and undependable action on account of the peculiar complicated composition of the tubercle bacillus.

Hirschfelder of San Francisco prepared a tuberculin extract by digesting the tubercle bacillus with pepsin and then filtering through a porcelain filter, believing that in this manner he released the endotoxins from the tubercle bacillus. Successful immunization with this preparation has not been reported.

Another preparation, introduced by Beraneck, deserves mention for the reason that with it he attempted to obtain all the substances of the tubercle bacillus which have immunizing properties, both in the culture and in the bacteria themselves. Beraneck's tuberculin consists of a mixture of tuberculin broth filtered free from bacilli and evaporated down in vacuo at low temperature, and an extract of the bodies of tubercle bacilli made with orthophosphoric acid. The latter therefore contains the bacillary protein in the form of an acid orthophosphate of albumin. As a culture medium for both the components of his mixture, Beraneck employs nutritive broth without any addition of peptone and albumose in order to keep the tuberculin as free as possible from non-specific and toxic substances. Sahli is the most prominent advocate of Beraneck tuberculin, claiming to have better success with it than any other preparation.

Wilkinson of London found that he obtained the best results in the treatment of tuberculosis by using several preparations of tuberculin in the same individual. He begins with Denys' bonillon filtrate, which is the weakest form of tuberculin, and tries to obtain immunity to this form of tuberculin. He then successively employs bovine O.T., human O.T. and finally B.E. It is remark-

able what large doses of the latter he is able to inject toward the conclusion of the treatment without any apparent untoward effect. I have seen him inject from 0.5 to 1 cc. of the original solution of B.E. He not infrequently obtains severe general reactions, which he does not regard as dangerous to the patient. He claims that the reason Koch's use of large doses of tuberculin resulted disastrously was that his patient had not been previously immunized with the weaker preparations of tuberculin. Loeffler, who several years ago visited Wilkinson's clinic, was much impressed by the results the latter obtained. There is no doubt that Wilkinson obtains satisfactory results from this method of treatment. It is, however, unscientific for the reason that there is an overlapping, in that one or more of the tuberculins he employs are toxic or contain similar antigens to the one previously used. Empirically, however, he had stumbled upon the right track.

Much and Deycke believed that the reason for the indifferent success obtained in the use of tuberculins lay in the composition of the tubercle bacillus, which is a complicated organism, and that most of the tuberculins were prepared without taking this fact into consideration, and therefore proved invariable antigens for active immunization. Proper antigens were only to be obtained by attacking the tubercle bacillus in a chemico-biological manner. After much experimental work they discovered that weak organic acids acting upon the tubercle bacillus will unlock, not dissolve, the bacillary bodies. They employed lactic acid, and after the acid had been allowed to act upon the tubercle bacillus for a number of weeks the mixture could be divided into two parts by centrifugalization; the soluble part of the tubercle bacillus was contained in the lactic acid and the residue consisted of the unlocked bacillus. The former was found to be toxic, comparable in many respects to Koch's original tuberculin in that it produced death when injected into tuberculous guinea pigs, but possessed no immunizing properties. They therefore entirely discarded it for immunizing and therapeutic purposes.

The residue (M.Tb.R.), which upon staining with Ziehl had lost all acid-fastness originally possessed by the tubercle bacillus previous to the unlocking, had however strong immunizing properties when injected in increasing doses into guinea pigs, and was non-toxic and could be injected intraperitoneally into these small animals in enormous doses without lethal effect. When M.Tb.R. was used therapeutically in tuberculous patients it occasionally failed to develop antibodies in these patients. This failure was explained in this manner: The M.Tb.R. is a biological chemical mixture consisting of three principal groups of ingredients, namely albumins, fatty acids, and neutral fats. Now if a tuberculous individual were treated with all three of these substances for the purpose of developing antibodies, and he already possessed antibodies to one or more of these component elements of the tubercle bacillus, an antagonism might occur which could defeat the object sought. They therefore developed a therapeutic method of employing the M.Tb.R. and its components by means of the complement fixation and intracutaneous tests. They determined to what extent the antibodies to M.Tb.R., or the partial antigens composing it, were present in the individual. Then by means of daily injections of the proper antigens they developed the corresponding antibodies. Whenever the partial antigens are used in the complement fixation and the patient's serum fails to fix the complement with any of these antigens, the humoral antibodies to that particular antigen are deficient. It was soon discovered that the complement fixation test showed the presence of humoral antibodies, but that these fluctuated daily and hourly, and their accurate determination required laboratory skill and considerable time. Much and his co-workers employed the sheep hemolytic system, which does not appear to be so satisfactory in the complement fixation when bacterial antigens are used. American laboratory workers have recently obtained better results with complement fixation in tuberculosis by employing the anti-human hemolytic system. The disturbing factors, namely the hemolytic effect of bacterial

antigens on sheep cells and the presence of an excessive amount of sheep cell hemolysin in the serum under examination (for it is not uncommon to find large amounts of a natural anti-sheep amboceptor in the serum of the tuberculous individual), are eliminated by the employment of the antihuman hemolytic system. Williams and Burdick have for some time employed the anti-human hemolytic system in their complement fixation tests, in the preparation of autogenous vaccines. They propose to employ the same system in complement fixation tests in tuberculosis, using the subdivisions of the tubercle bacillus as antigens. Owing to the unsatisfactory results obtained with the complement fixation tests, Much's pupils employ the intracutaneous injection of the M.Tb.R., and its partial antigens; this demonstrates the cellular immunity of the individual. "Skin hypersensitiveness indicates cellular immunity, and is evidenced by hyperemic reactions obtained in response to the intracutaneous injections of dilutions of the partial antigens. Increased hypersensitiveness is shown by the presence of reaction to high dilutions of the antigen. A negative tuberculin test indicates the absence of antibodies. Either the body has never come in contact with the T.B., and therefore no antibodies are present, or the antibodies are absorbed by the tuberculin generated by the tuberculous lesions of advanced tuberculosis or miliary tuberculosis." (Diag. of Tuberculosis in Infants, Combe; Le Nourrisson, Paris, January 1916.)

"In Tuberculous Meningitis, a diminution of the intensity of the tuberculin reaction is indicative of failing resistance of the body to tuberculous infection." (E. A. Morgan, *Am. Journal of Diseases of Children*, March, Vol. XI No. 3.)

There is an apparent contradiction between the hypersensitive skin reaction with tuberculin, which is a measure of the individual immunity, and the recently discovered Shick reaction with the toxin of diphtheria, where the absence of reaction indicates the presence of immunity. I should explain this difference as follows: In the Shick reaction we are dealing with a soluble toxin, and the antitoxin present in the blood neutralizes

the toxin when introduced by vaccination, hence no local reaction appears. With tuberculin it is different: this is a complicated antigen, and the lytic antibody present in a tuberculous individual releases the toxic principle from the tuberculin or foreign proteid. It is the process of releasing the endotoxin contained in the tuberculin that produces the local reactions. Hence a hypersensitive skin reaction indicates the presence of lytic bodies, and the proper condition for the production of specific antibodies. Roemer (Brauer, *Beiträge zur Klin. der Tuberculose*, 1908), in his experiments in immunizing cattle with live tubercle bacilli, has shown that the immunity obtained is manifested by local hypersensitiveness. The graduated intracutaneous skin reaction demonstrates the cellular immunity of the individual, which is stable and gives a suitable index of the underlying humoral immunity. They therefore employ the intracutaneous injection of the M.Tb.R. and the partial antigens in graduated doses in most of their cases for the purpose of determining the proper therapeutic dose. The site of these injections is usually in the upper arm; the skin is first cleansed with a mixture of benzine and ether; separate syringes and needles are used for each of the various dilutions of the partial antigens. It is exceedingly important that the injections be made intracutaneously, as otherwise there is a possibility of error in the readings of the reactions; besides, no general reactions will occur from the fifteen or twenty injections unless a great many of the injections are made subcutaneously. The amount of each injection is about one-twentieth of a c.c., or sufficient to raise a distinct white bleb about the size of a lentil. The injections are made as follows: M.Tb.R. and A. 1-1m,* 1-10m, 1-100m, 1-1000m, and 1-10,000m; of the partial antigen F, 1-1,000, 1-10,000, 1-100,000, 1-1,000,000, 1-10m; of the partial antigen N, 1-1,000, 1-10,000, 1-100,000, 1-1m. Empirically, it was determined that the average cellular immunity value would be for the M.Tb.R. and A. at 1-100m dilution; for the F. 1-100,000 and for the N. 1-10,000. It

*The letter m is here used to denote millions

will be seen from this that the M.Tb.R. and A. are a thousand times stronger than the N. Wherever the response to the intracutaneous injections of the partial antigens is maintained in this relative proportion, the treatment with the M.Tb.R. is instituted; where this relative response is not maintained, treatment with that particular antigen which falls below its proper average is instituted. For example: If a positive skin reaction is obtained to all intracutaneous injections of A. from 1-1m to 1-10,000m, but of F. and N. only 1 to 10,000, it would indicate that the antibodies to the latter were weakly developed, and treatment with F. and N. should be used. In the great majority of instances the response to the partial antigens is maintained in proper relation to each other, and in such cases the treatment is comparatively simple. It is only necessary to determine the beginning dose of the M.Tb.R., so instead of giving intracutaneous injections of the partial antigens the intracutaneous test is made with the various dilutions of the M.Tb.R. from 1-1m to 1-10,000m, and treatment is begun with the dilution just below that which gives a reaction. Should the treatment prove unsuccessful, i.e. fail to bring about an improvement of symptoms, then it will become necessary to perform the intracutaneous tests with all the partial antigens in order to determine which partial antigen is deficient in antibody response. Here the treatment becomes more complicated, since treatment is then instituted with the antigens A, F, N either singly or combined according to the intracutaneous titer obtained. The treatment as recommended by Much requires daily injections for a period of four to six weeks. Then an intermission of four weeks followed by a repetition of the intracutaneous test, and beginning of therapeutic injections of the partial antigens in the dosage as determined by the new skin titer.

The results obtained with Much's antigens at the Eppendorfer Hospital in Hamburg, and the General Hospital in Lubeck, are tabulated by Altstaedt as follows:
Total number of cases treated, 261:

	Arrested 187 (72%)	Improved 34 (13%)	Failed 40 (15%)
Of the 1st and 2nd stage cases....	93%	6%	1%
Of the 3rd stage cases	54%	19%	27%
Tuberculosis of other organs ..	85%	11%	4%
Cases treated with daily injections; total number 147:			
	Arrested 124 (84%)	Improved 18 (12%)	Failed 5 (4%)
Of the 1st and 2nd stage cases ...	93%	5%	2%
Of the 3rd stage cases	75%	20%	5%
Tuberculosis of other organs ..	92%	8%	0

It will be seen that the later results are better than the earlier ones. This is ascribed to the fact that daily injections were given in the later series of cases.

My early experience with Much's partial antigens was not satisfactory. This was due to several reasons. In the first instance almost all of the patients were far advanced in the disease and had poor resistance, and secondly I used my injections only two or three times weekly, and did not keep up the injections long enough, and most of the patients were treated ambulatorily. During the past year, I have changed my plans and visit most of my patients. I give the injections every other day for two months, and then twice weekly for another month or longer. In four cases a second course of treatment has been given. In all I treated twenty-two cases, of whom fourteen were in the advanced stage of T.B. (Turban III), and eight were moderately advanced, or in the early stage of the disease. No incipient cases were treated. Seven were patients at National Jewish Hospital for Consumptives, who had shown no improvement during a stay of over three months. In several of these cases artificial pneumothorax treatment was combined with the partial antigen treatment with most happy results.

In tabulating the results of a treatment for pulmonary tuberculosis, the disease is regarded as arrested in those patients that have gained weight and show subjective physical improvement, in whom the cough has disappeared, there is no fever, and the difference between morning and evening temperature is not over one degree; in whom no adventitious signs, i.e. râles, are heard in

the lungs, and the sputum is negative for tubercle bacilli upon at least three different examinations, in one of which the sputum has been treated with antiformin.

Those patients are regarded as improved who show subjective and objective improvement and a diminution of previously existing physical signs in the lungs, but in whom cough and expectoration still persist, though diminished in severity and daily amount; and in whom tubercle bacilli may still be found after painstaking search.

Reports of Cases.

Case 1. S. R. Advanced tuberculosis, Turban III. Given a course of Tb.R., later developed tuberculous empyema, following artificial pneumothorax. Still coughs slightly, is working. Much improved.

Case 2. H. S., second stage, treated with neutral fats, is working, no cough, no t.b. in sputum.

Case 3. M. G., advanced tuberculosis, Turban III. Improved markedly under M.Tb.R. Treatment ambulatory. Later, temperature persisting, artificial pneumothorax was attempted without success. Several days later was greatly frightened in the middle of the night and developed tuberculous meningitis, from which she died.

Case 4. E. H. S., chronic fibroid advanced, involving both lungs. F. & N. used, two courses of treatment, ambulatory. Patient improved, is working at present, still coughs, t.b. present in sputum.

Case 5. M. W., early case. A short course given, returned to the east improved.

Case 6. H. S. H. Advanced, Turban III. Improved somewhat, was given a short course, no change, sputum still contains t.b., was treated ambulatorily. This patient was a difficult one to control, being of a nervous temperament and high strung.

Case 7. L. W., a very advanced case, Turban III. Much emaciated, poor resistance. Under M.Tb.R. administered for two months at Heartsease, she gained forty pounds. Returned to her home where the conditions and environment were poor, relapsed somewhat, then used artificial pneumothorax, improved again until December, 1915, contracted the grippe, epidemic at that time, and following which the tuberculous process became mark-

edly active again. Was again placed on M.Tb.R. and is again improving markedly. Temperature normal.

Case 8. F. M., advanced pulmonary tuberculosis, Turban III. Poor resistance. On M.Tb.R. administered ambulatorily, improved, later developed tuberculous meningitis and died.

Case 9. Mrs. H., advanced pulmonary tuberculosis, Turban III, showed poor resistance, weak myocardium. Improved on Tb.R., developed the grippe and died of myocardial weakness.

Case 10. Mrs. O. K. Early stage, Turban I, M.Tb.R. at first administered ambulatorily, later at sanatorium arrested. Has returned east, is reported perfectly well, eight months have elapsed since her return.

Case 11. M. G. Advanced pulmonary tuberculosis. Had a previous course of B.E. over a year previous, improved, went to work as saleswoman and relapsed. Was treated with M.Tb.R., improved markedly, have not permitted her to return to work, however.

Case 12. Mrs. M. Advanced tuberculosis, Turban III, febrile, poor resistance. Has improved markedly under M.Tb.R., is at present receiving a second course. Later developed pneumonia and during convalescence developed tuberculous meningitis and died.

Case 13. R. W. Advanced pulmonary tuberculosis, febrile, poor resistance. Has improved somewhat. Gained in weight, and appetite better. Cough and sputum diminished, latter however still contains t.b.

Case 14. J. R. Early stage, t.b. none, febrile, poor resistance, is improving. Tb. not found in sputum after two examinations.

Case 15. Mrs. R. Advanced pulmonary tuberculosis, Turban II, resistance good. Patient fleshy. Severe cough and profuse expectoration, numerous t.b. Is under treatment at present, improving; cough and expectoration diminished.

Cases Treated at National Jewish Hospital.

Case 1. J. R. Moderately advanced Turban II. Poor resistance, cough and expectoration moderate. Improved at first under treatment. Cough and expectoration decreased, at present condition unchanged. No

loss of weight. Sputum examination negative for t.b.

Case 2. C. B. Advanced tuberculosis, Turban III. Cough and expectoration moderate. 10 t.b. per field. Following treatment. Lost weight (4 lbs.). Feels stronger. Cough and expectoration diminished. Sputum still contains t.b.

Case 3. T. Turban II, cough severe, expectoration profuse. T.b. 20 per field. Following treatment. Feels and looks better, has lost 4 pounds. Cough and expectoration markedly diminished. Only 1 t.b. per field.

Case 4. F. Moderately advanced, Turban II. Cough and expectoration moderate, 20 t.b. per field. Following treatment. Condition unchanged. Sputum still shows t.b.

Case 5. S. R. Advanced Turban III. Cough severe, expectoration profuse, t.b. 5 per field. Following treatment. Cough and expectoration diminished. Feels stronger. Sputum still shows t.b.

Case 6. S. G. Advanced tuberculosis Turban II. Cough severe, expectoration profuse, t.b. 50 per field. Following treatment, feels decidedly better and stronger. Cough and expectoration diminished, but still shows 3 to 5 per field.

Case 7. H. P. Advanced pulmonary tuberculosis, Turban III. Cough and expectoration moderate. Following treatment. No change. T.b. 20 per field.

Summary of 22 Cases Treated With Partial Antigens.

Advanced Pulmonary Tuberculosis: Total 14. Arrested, 0; improved, 8; unchanged, 2; died, 4. Early and moderately advanced tuberculosis: Total 8. Arrested, 3; improved, 3; unchanged, 2; died, 0.

I should summarize the results obtained with partial antigens as follows: While not so brilliant as those reported in Germany, they were on the whole satisfactory, certainly better than with the other forms of tuberculin in my hands. My later results appear to be better than when I first began their use. In almost all of the patients treated, the diminution of cough and expectoration was marked. No general reactions of severe degree were observed. The period of treatment is much shorter than with the other forms of tuberculin. The use of par-

tial antigens is not contra-indicated by the presence of fever or hemorrhage.
354 Metropolitan Bldg.

LIST OF BOOKS

ADDED TO THE LIBRARY OF THE COLORADO STATE MEDICAL SOCIETY.

From October, 1915, to September, 1916, by Purchase and Through Reviews in Colorado Medicine.

(In the Care of the Library of the Medical Society of the City and County of Denver.)

- Albee, F. H. Bone Graft Surgery. 1915.
- American Medical Association. New and non official remedies. 1916.
- Anders, J. M. Text book of the practice of medicine. 1915.
- Atkinson, D. F. Social travesties. 1915.
- Bass, C. C. and Johns, F. M. Alveodental pyorrhea. 1915.
- Bridge, H. L. Manual of practical nursing. 1916.
- Brown, L. Rules for recovery from pulmonary tuberculosis. 1916.
- Bruning, H. and Schwalbe, E. Handbuch der allgemeinen Pathologie. 1912.
- Calisch, I. M. Dutch-English dictionary. 1892.
- Calot, F. Indispensable orthopaedics. 1915.
- Carey, H. W. Bacteriology for nurses. 1915.
- Chapin, C. V. Report of state public health work. 1915.
- Chartres, A. V. Marie Tarnowski. 1915.
- Cheyne, W. W. Tuberculous diseases of bones and joints. 1911.
- Coakley, C. J. Manual of diseases of the nose and throat. 1914.
- Coolidge, A. Diseases of the nose and throat. 1915.
- Cornell, W. S. Health and medical inspection of school children. 1912.
- Cragin, E. B. Practice of obstetrics. 1916.
- Crile, G. W. Mechanistic view of war and peace. 1915.
- Crossen, H. S. Operative gynecology. 1915.
- Cullen, T. S. Embryology, anatomy and diseases of the umbilicus. 1916.
- Da Costa, J. C. Principles and practice of physical diagnosis. 1915.
- Davis, C. H. Painless child birth. 1916.
- Davison, C. and Smith, F. D. Autoplastic bone surgery. 1916.
- De Lee, J. B. Principles and practice of obstetrics. 1915.
- De Schweinitz, G. E. Diseases of the eye. 1916.
- Dock, L. L. Text-book of materia medica for nurses. 1915.
- Dorland, W. A. N. Medical directory. 1915.
- Edwards, A. R. Principles and practice of medicine. 1916.
- Elsberg, C. A. Surgical diseases of the spinal cord. 1916.
- Fishberg, Maurice. Pulmonary tuberculosis. 1916.
- Flagg, P. J. Art of anaesthesia. 1916.
- Fox, H. Elementary bacteriology for nurses. 1916.
- Friesner, I. and Braun, A. Cerebellar abscess. 1916.
- Fürth, Otto von. Physiological and pathological chemistry of metabolism. 1916.
- George, A. W. and Leonard, R. D. Roentgen diagnosis of the gastro-intestinal tract. 1915.
- Golovsky, M. English-Russian dictionary.
- Hatcher, R. G., and Willert, M. I. Pharmacology of useful drugs. 1915.
- Haworth, E. P. Nitro by hypo. 1915.
- Hayden, J. R. Venereal diseases. 1916.

- Hill, L. W. and Eckman, R. S. Starvation treatment of diabetes. 1915.
- Hoffman, F. L. Mortality from cancer throughout the world. 1915.
- Holland, J. W. Medical chemistry and toxicology. 1916.
- Howell, W. H. Text-book of physiology. 1915.
- Hull, A. J. Surgery in war. 1916.
- Hun, Henry. Atlas of differential diagnosis of diseases of the nervous system. 1914.
- Huntington, E. Civilization and climate. 1915.
- Juettner, Otto. Treatise on medical practice. 1916.
- Kanavel A. B. Infections of the hand. 1914.
- Knox, R. Radiography, x-ray therapeutics and radium therapy. 1916.
- Kocher, Theodor. Text-book of operative surgery. 1914.
- Lowenberg, Harry. Practical treatise on infant feeding. 1916.
- MacCullum, W. G. Text-book of pathology. 1916.
- Macmichael, W. Gold headed cane. 1915.
- MacMunn, C. A. Spectrum analysis applied to biology. 1914.
- Minot, C. S. Modern problems of biology. 1913.
- Mix, C. L. Practical medicine series. 1915.
- Morse, J. L. and Talbot, F. B. Diseases of nutrition and infant feeding. 1915.
- Moynihan, B. G. A. Pathology of the living. 1910.
- Norris, G. W. Blood pressure. 1916.
- Osborne, O. T. and others. Handbook of therapy. 1915.
- Ostwald, W. Handbook of colloid chemistry. 1915.
- Pusey, W. A. Syphilis as a modern problem. 1915.
- Richter, V. Organic chemistry. 1916.
- Roberts, J. B. and Kelly, J. A. Treatise on fractures. 1916.
- Schamberg, J. F. Diseases of the skin. 1915.
- Schmidt, Rudolph. Diagnosis of the malignant tumors of abdominal viscera. 1913.
- Smith, G. E. What to eat and why. 1915.
- Smithies, Frank. Cancer of the stomach. 1916.
- Stedman, T. L. Reference handbook. 1916.
- Towns, C. B. Habits that handicap. 1915.
- Trudeau, E. L. Autobiography. 1915.
- Underhill, F. P. Physiology of the amino-acids. 1915.
- Vecki, V. G. Sexual impotence. 1916.
- Velazquez, M. Spanish-English Dictionary. 1900.
- Wadsworth, W. S. Post-mortem examinations. 1915.
- Walsh, J. J. The Popes and science. 1915.
- White, W. A. and Jelliffe, S. E. Modern treatment of nervous and mental diseases. 1913.
- Whiting, A. D. Bandaging. 1915.
- Wiggers, C. J. Modern aspects of the circulation in health and disease. 1915.
- Wolff-Eisner, A. Clinical immunity and sero-diagnosis. 1911.
- Woodruff, C. E. Medical ethnology. 1915.
- Bergen (Burlington), H. A. Black (Pueblo), G. A. Boyd (Colorado Springs), C. T. Burnett, (Boulder), G. H. Cattermole (Boulder), F. C. Chamberlain (Colorado Springs), J. C. Chipman (Sterling), E. A. Clarke (Akron), P. P. Collins (Grand Junction), W. W. Crook (Glenwood Springs), E. D. Downing (Woodman), Crum Epler (Pueblo), E. E. Evans (Ft. Morgan), Livingston Farrand (Boulder), F. H. Farrington (Boulder), M. R. Fox (Silverton), C. O. Giese (Colorado Springs), O. M. Gilbert (Boulder), C. Gillaspie (Boulder), O. R. Gillett (Colorado Springs), F. W. E. Henkel (Silverton), K. W. Holmes (Minturn), D. J. Horton (La Salle), C. J. Howard (Victor), T. R. Knowles (Colorado Springs), C. L. LaRue (Boulder), H. T. Low (Pueblo), A. C. Magruder (Colorado Springs), P. J. McHugh (Fort Collins), H. C. Moses (Colorado Springs), W. A. Palmer (Castle Rock), A. H. Peters (Colorado Springs), J. R. Robinson (Colorado Springs), and W. J. White (Longmont); and also Mr. G. H. Williamson, Architect of the building; Mr. Chalmers Hadley, City Librarian, and Mr. John Parsons, Ex-Assistant City Librarian.

Dr. John S. Fox of Silverton has returned from service as a member of the British expeditionary forces in France. The hospital in which Dr. Fox worked was just behind the fighting lines, and on many occasions shells fell around it.

Two Denver physicians were recently arrested under the charge of having issued prescriptions for narcotic drugs without proper cause.

Dr. L. R. Allen of Colorado Springs has been appointed physician of El Paso County.

Dr. Charles E. Pate was married on Thanksgiving Day to Miss Isabelle Cook. When the fact was discovered Dr. Pate's colleagues at suite 520 Metropolitan building made a great deal of work for the janitor.

Dr. George H. Cattermole of Denver and Boulder returned a week or two ago from a five weeks' absence, during which he visited several of the eastern clinics.

Dr. T. E. Carmody of Denver is slated to deliver a vice-presidential address before the Academy of Ophthalmology and Oto-laryngology at its meeting in Memphis Tennessee.

Among Denver surgeons who will attend the meeting of the Western Surgical Association at St. Paul, Minnesota, on December 15th and 16th are Drs. Freeman, Fowler, Hegner, Wetherill, Shere and Tennant.

Dr. C. G. Parsons, formerly of Denver, sends notice that he is limiting his practice in Los Angeles to diseases of the heart and arteries.

Dr. G. Law. Greeley's first physician, died at his home, on November 18th, aged 78 years. He had been critically ill for three weeks. He was the attending physician at the birth of the first child born in Greeley, Horace Greeley Dixon.

Dr. and Mrs. H. A. Barclay, for several years residents of Colona, are spending the winter in San Diego, California.

A man named J. F. Chandor was recently arrested in Denver on the charge of falsely representing himself to be a licensed physician. Chandor had obtained drugs and money by stating that he had offices with former Mayor Perkins.

Reports of the Denver City Health Department show a slight decrease in the number of deaths from tuberculosis in the last few years, a decided reduction in the number of fatalities from typhoid fever, a diminution in the number of deaths from diphtheria, a marked increase in the number of deaths reported as due to "heart disease", and an

Note—Members of the Colorado State Medical Society may have books and periodicals sent to them by mail or express for a period to be specified in each instance (the time usually allotted plus the time required for transportation), by paying in advance the expense entailed.

News Notes

The following members of the State Society were guests of the Medical Society of the City and County of Denver at the dedication dinner of the new library building on November 29th. Drs. W. W. Arnold (Colorado Springs), F. L.

increase in the number of deaths from cancer.

Dr. E. C. McMillan, formerly of Hubbard, Iowa, has opened an office in Lamar.

Dr. Samuel W. Hamilton of New York has come to Denver to undertake a survey of local conditions in the management of feeble-minded adults.

Dr. Robert Hughes died at his home in Denver on November 16th, aged 74 years. Dr. Hughes had resided in Denver for eighteen years, but had not practiced his profession for some time past.

Dr. Bon O. Adams, who for ten years was associated with Dr. Corwin in the Surgical Service at Minnequa Hospital, is now located in Riverside, California.

The National Board of Medical Examiners held its first examination from October 16 to 21, in Washington, D. C. There were thirty-two applicants from seventeen states, representing twenty-four medical schools, and of these sixteen were accepted as having the necessary preliminary and medical qualifications, ten of whom took the examination. The following men passed: Dr. H. S. Newcomer, Johns Hopkins University; Dr. W. W. Southard, Johns Hopkins University; Dr. O. C. Snyder, University of Michigan; Dr. T. A. Johnson, Rush Medical School, and Dr. H. T. Kristjanson, Rush Medical School. The second examination will be held in Washington, D. C., June, 1917. Further information may be had by applying to Dr. J. S. Rodman, Secretary, 2106 Walnut St., Philadelphia, Pa.

The Louisville Monthly Journal of Medicine and Surgery has changed its name to the Mississippi Valley Medical Journal, under which title it will act as the official organ of the Mississippi Valley Medical Association.

Announcement is made of the election of Mr Louis R. Curtis, for eighteen years superintendent and Secretary of St. Luke's Hospital, Chicago, as president of the surgical instrument firm of Frank S. Betz. Mr. Frank S. Betz, founder of the concern bearing his name, will continue with the company as Chairman of the Board of Directors.

The first scientific session of the American Congress on Internal Medicine will take place in New York City, on December 28th and 29th, 1916 following the meeting of the American Association for the Advancement of Science. There will be a symposium on duodenal ulcer.

Medical Societies

CITY AND COUNTY OF DENVER.

The regular meeting of the Medical Society of the City and County of Denver was held November 21, 1916. The meeting marked the passing of the old hall. The new assembly room and the new medical library are to be formally opened on November 29, 1916.

President Dr. Sewall presided.

Applications from Dr. Frank L. Bergen and Dr. Jefferson D. Nifong for membership in the society were read.

Drs. McLeod M. George and Frank W. King were elected to membership in the society.

Dr. Geo. A. Moleen read a paper entitled "Dyspituitarism—Report of Cases of Preadolescent Disturbance of Pituitary Body".

Dr. Saling Simon read a paper entitled "Artificial Pneumothorax in Pulmonary Tuberculosis, Illustrated With Lantern Slides".

Drs. Levy and Lyman reported a case of

Foreign Body in the Esophagus, With Consequent Mediastinitis.

The case was that of a robust young woman, who while eating oysters felt a piece of oyster shell lodge in her esophagus. She went to Dr. Levy about two hours later. Under local anesthesia, with the aid of the esophagoscope, Dr. Levy removed the piece of oyster shell (which was almost one inch square) from the upper portion of the esophagus. All went well for several days, after which dysphagia and dyspnea developed. On about the fifth day after the removal of the shell the dyspnea became so marked that Dr. Levy performed a tracheotomy. He experienced difficulty in relieving the dyspnea, which was evidently due to an obstruction lower down. He succeeded by using a suitably sized piece of rubber drainage tube which reached just beyond the point of obstruction. Dr. Lyman was called in consultation. Drs. Childs and Crosby made a radiogram of the chest and the diagnosis of suppurative mediastinitis was established. Dr. Lyman operated, approaching the mediastinum from the neck, and evacuated a large amount of fetid (colon bacillus) pus. To facilitate drainage the patient was placed in the Trendelenburg position. Several days later, under local anesthesia, a gastrotomy was performed by Dr. Lyman, and through the opening thus made the patient was nourished. The progress of the patient to the time of report has been quite satisfactory. Dr. Lyman complimented Dr. Carl Roehrig for ably administering the anesthetic through the tracheotomy tube when the mediastinal operation was performed. Dr. Lyman stated that there was a small esophago-tracheal fistula present, but it was of no great consequence and he anticipates a prompt recovery.

C. F. HEGNER.

LAS ANIMAS COUNTY.

The regular meeting of the Las Animas County Medical Society was held Friday evening, December 1, 1916. Members present were: Drs. D. C. Thompson, Ben Beshoar, Elum M. Russell, G. W. Robinson and A. J. Chisholm.

The regular order of business was conducted and the following two applicants for membership were voted upon favorably: Drs. W. L. Barbour of Cedar Hill and Thomas E. Bruce of Grey Creek. The meeting adjourned at 10 p. m., to meet the first Friday in January, 1917.

A. J. CHISHOLM,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

The Colorado Ophthalmological Society met in the office of Dr. D. H. Coover, Saturday evening, November 18th, 1916. Twenty-three members were present.

Drs. G. C. Cary, of Boulder, P. S. Lansdale, of Longmont, and J. C. Strong, of Leadville, were elected to membership in the Society.

Letters from Dr. G. F. Libby and Dr. J. A. Robinson were read. The former was granted a year's leave of absence.

Dr. Edward Jackson presented a case: a young man aged 21, operated upon for divergent squint of thirty-five centads.

Dr. Wm. C. Bane presented a young lady, aged 21, with convergent squint of sixty centads.

Dr. E. T. Boyd presented two cases: one of nystagmus and another of congenital band in the vitreous.

Dr. H. R. Stilwill presented a man with xerosis of the conjunctiva.

Dr. D. G. Monaghan presented three cases as follows: One of traumatic cataract; one of corneal ulcers and another of traumatic rupture of the iris and choroid.

Dr. D. A. Strickler presented a case of toxic amblyopia.

Dr. Wm. C. Bane presented a case of fibroma of the optic nerve in a boy of seven years.

Dr. W. F. Matson presented a case of vernal conjunctivitis.

Dr. J. A. McCaw presented a case of luetic neuroretinitis.

Dr. F. R. Spencer presented a case of interstitial keratitis due to acquired lues.

A motion to hold the society meeting in the county society rooms carried. This was referred to the Executive committee for suitable arrangements.

For fuller reports and discussions see the Ophthalmic Record and the Annals of Ophthalmology.

F. R. SPENCER,
Secretary.

Book Reviews

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, etc., etc., Edited by H. R. M. Landis, M. D., with the Collaboration of Chas. H. Mayo, M. D., and others. Vol. III, Twenty-sixth Series, 1916. Philadelphia and London. J. B. Lippincott Company.

The twenty articles of this volume have more the character of especially prepared papers than of clinical lectures, but are all practical and of value to the general practitioner rather than the specialist.

Under treatment considerable prominence is given to electricity. The nature and uses of high frequency currents are gone into at some length by Dr. Frederic De Kraft. Dr. B. B. Vincent Lyon recommends electricity as a very valuable adjunct if not the principal method of treatment in the management of obesity. The electricity is used to give passive exercise.

The article by Henry Tucker on the treatment of gonorrhea in the male is a careful discussion and description of the details of the conservative treatment of this disease, and should be of value to the general practitioner.

Under diagnosis there are several valuable articles on pulmonary conditions, and the use of the X-ray, by A. W. Hewlett. James G. van Zwaluwenburg, Charles L. Miner and F. H. Baetjer.

The discussion of the occasional association of herpes zoster with muscular paralysis or with a generalized eruption should interest both the dermatologist and neurologist. Appended to this there is a valuable bibliography.

"The Mental Examination of Negroes", by John E. Lind of the Government Hospital for the Insane at Washington, calls attention to the important fact that in estimating the mental changes due to disease allowance must be made for the mental capacity and mental attitude normal to the patient. The presence in an ignorant negro of delusions and hallucinations that fit in with his ordinary superstitions is not so

important as it would be in an educated white man.

Under Surgery, the article on Birth Traumas of the Upper Extremity by Gwilym G. Davis, is practical and helpful in the treatment of these often hopeless conditions.

The discussion of "Anaesthesia from the Point of View of Instructor and Student," is exceedingly good. The author, Paluel J. Flagg, deplors the fact that so often, when a patient is to be anesthetized, an inexperienced interne without even any theoretical preparation, is simply given an ether cone and told to "go to it." Without taking up the new and complicated methods of anesthesia, the author discusses the fundamental principles involved, and describes in detail the ordinary methods.

The volume closes with an historical article by Fielding H. Garrison on "Armand Trousseau, a Master Clinician." C. S. P.

How to Live; Rules for Healthful Living Based on Modern Science, Authorized by and Prepared in Collaboration with the Hygiene Reference Board of the Life Extension Institute, Inc., by Irving Fisher, Chairman, Professor of Political Economy, Yale University, and Eugene Lyman Fisk, M.D., Director of Hygiene of the Institute. Eighth Revised Edition. Funk and Wagnalls Company, New York and London, 1916. Price, \$1.00 net.

This book has been widely advertised in the lay press and has gone through eight editions in less than a year. In the preface we are told that the purpose of the book is to spread a knowledge of individual hygiene.

Hygiene is considered in its relation to the preservation of health; the improvement in the physical condition of the individual and the increase of his vitality, rather than the mere prevention of disease or epidemics.

There are five chapters on air, food poisons, activity and hygiene in general. Then there are supplementary notes on special subjects, in which the question of food is gone into in more detail, and such subjects as weight and under-weight, posture, alcohol, tobacco, colds, degenerative diseases and eugenics are taken up.

There is not much that is new in this work, but it is up to date, well written, and the subjects discussed are treated in a clear, sane way. In the chapter on poisons it is stated that the "condition of focal infection or subinfection is coming to be recognized as a far more important cause of disease than the time-honored auto-intoxication, a term greatly abused and misused".

The chapter on eugenics is remarkably good, and what is known of the laws of heredity is clearly stated.

The book is readable and interesting and should be of great value to people who are desirous of improving their physical condition. C. L. P.

Practical Medicine Series, Volume VI. General Medicine Edited by Frank Billings, M.S., M.D. Series 1916. The Year Book Publishers, Chicago. Price, \$1.50.

This volume deals with infectious diseases, such as typhoid, paratyphoid, typhus, sandfly and undulant fevers; cholera, dysentery, malaria, etc.; diseases of the mouth and esophagus.

About a hundred pages are given over to discussion of the diseases of the stomach and duodenum, and nearly as extensive discussion on diseases of the intestines. There are also considered diseases of gall-bladder, liver and pancreas.

The literature on typhoid and allied fevers are quite fully reviewed, and the serum diagnosis, immunization and treatment by vaccines. There is a discussion of the use of mixed vaccines of typhoid, paratyphoid A, paratyphoid B, and cholera, as used in the Serbian army.

The busy practitioner will find the review of stomach, duodenal and intestinal diseases, quite complete.

As a ready reference on the latest advances in diagnosis and treatment of the diseases covered by this volume, it will be found very valuable. It contains the pith of current literature.

H. S. S.

Physician's Visiting List for 1917. P. Blakiston's Son & Company, 1012 Walnut St., Philadelphia, Pa. Prices ranging from \$1.25 to \$2.50.

This visiting list is in its sixty-sixth year of publication, a very good evidence of its popularity among medical men. It is a well-bound, compact book, well suited for its purpose, issued in different sizes to accommodate accounts of twenty-five to one hundred patients per day, in regular, perpetual and monthly editions.

The new dose list is in accord with the new United States pharmacopeia and in both the apothecary and metric systems. It contains such useful information as poisons and antidotes; treatment of asphyxia and apnea; signs of death; isolation periods in infectious diseases; tables of mortality; heights and weights; utero-gestation tables; record for births and deaths.

It is as complete and compact as any list in the market.

H. S. S.

The Practitioner's Visiting List for 1917. Four styles; weekly, monthly, perpetual, sixty-patient. Pocket size, substantially bound in leather with flap, pocket, etc.; \$1.25 net. Lea & Febiger, Publishers, Philadelphia and New York.

This visiting list is issued in four styles: weekly dated for 30 patients; monthly undated for 120 patients per month; perpetual undated for 30 patients, weekly per year; 60 patients, undated for 60 patients weekly per year, so as to meet the requirements of any practitioner.

This visiting list is in convenient pocket size, strongly bound in leather, with good paper for either pen or pencil.

It also contains such useful information as different weights and measures; tables of doses; poisons and antidotes; therapeutic suggestions of remedies in different diseases; important incompatibles; special memoranda for obstetrical cases and permanent records of births and deaths.

The arrangement is simple, yet complete and convenient.

H. S. S.

CONFESSIONS OF A CHIROPRACTOR.

An article inserted as an advertisement in the Ogden (Utah) Examiner, October 1, 1916, and evidently intended as an argument in favor of chiropractic, contains some statements which show how little use "healers" of that brand have for education. What is the use of preliminary education, anyhow? Note the following:

"Education which has no relation to the theme or subject under consideration becomes burdensome and therefore detrimental."

Greek and Latin, for example are "both dead tongues and, outside of those engaged in translating manuscripts, are used only to display pedantry; they are of no value to chiropractors."

They, of course, could never see the use of a medical education.

Note this, ye shades of Pasteur, Koch, Obermeier, and others!

"They would compel us to study bacteriology. This is of no value to the chiropractor. It is not worth while to spend time, energy and money to microscopically examine infinitesimal mites or to group and classify them."

Of course, there is no such thing as blood poisoning, or infections; diphtheria and its cure with antitoxin are fabrications from some overworked anemic intellect, and even if there are contagious diseases, smallpox, spinal meningitis, infantile paralysis or the like, all, forsooth, may be cured by the magic touch of the chiropractor applied to the patient's spine. Why bother one's head regarding microbes?

As to materia medica, oh, horrors!

"We would also be required to learn "materia medica." What on earth would we do with that ponderous knowledge, we who abhor the very name of drugs and repudiate their use?"

Even chemistry is tabooed.

"There is also chemistry, which has nothing in common with chiropractic and cannot be made an adjunct to it."

Evidently education generally has "nothing in common with chiropractic" or, for that matter, chiropractic has nothing in common with education, since

"Greek, Latin, bacteriology, chemistry and materia medica would be of no more use (to chiropractors?) than a whipsocket would be in an automobile or a smokestack to an aeroplane."

Yes, what on earth is the use of spending four years in high school, two years in college, four years in a medical school and a year or more as an intern in a hospital and getting all that "burdensome and detrimental" knowledge when you can become a full-fledged chiropractor for only three months or possibly less of corresponding study?

All of this reminds one of the old adage that "A wise man knows a fool because he has once been foolish, but a fool cannot know a wise man because he has never been wise."—Monthly Bul. Fed. State Bds. of Med. Ex.

EFFECTS OF THE "SAFETY-FIRST" CAMPAIGN.

That the "safety-first" campaign, inaugurated a few years ago, has borne good fruit is brought out by the figures for accidental deaths. For 1913, 54,011 deaths were reported as due to accident; for 1914 the corresponding number was reduced to 51,770, and for 1915 to 51,406; and during this period there was not only an increase in the population of the registration area as it existed in 1913, but an increase in the extent of the area itself. The rate per 100,000 population for accidental deaths fell from 85.3 in 1913 to 78.5 in 1914 and to 76.3 in 1915. There has been a very considerable reduction in fatalities due to railway, street car, mine, and machinery accidents, and the increase in those resulting from automobile accidents has not been so rapid as the increase in the number of machines in use.

Deaths due to railway accidents and injuries

totaled 6,652 in the registration area in 1915, or 9.9 per 100,000. This number includes fatalities resulting from collisions between railway trains and vehicles at grade crossings. This death rate is the lowest on record and shows a marked decline during the last ten years.

Deaths resulting from street-car accidents and injuries numbered 1,555, or 2.3 per 100,000. This rate, like that for railway fatalities, is the lowest on record and shows a material falling off during the past ten years.

Automobile accidents and injuries caused 3,978 deaths in 1915, or 5.9 per 100,000. There has been an increase in this rate from year to year, but, as already mentioned, the increase has not been so rapid as that in the number of machines in use.

The number of deaths from mine accidents and injuries in the registration area in 1915 was 2,009, corresponding to a rate of 3 per 100,000. This rate shows a material decline as compared with the corresponding figure for 1913, 3.6, and a very great decline as compared with that for 1907, 4.8, which is the highest on record.

Deaths caused by machinery accidents in 1915 numbered 1,257, or 1.9 per 100,000. This rate also shows a marked decline during recent years, the corresponding figures for 1913 and 1914 being 2.4 and 2, respectively. The highest recorded rate from this cause is 2.5, for 1907.

THE COLORADO STATE MEDICAL SOCIETY.

(Incorporated November 1, 1888.)

The Next Meeting Will Be Held in Colorado Springs, September, 1917.

OFFICERS, 1915-1916.

President, Alexander C. Magruder, Colorado Springs.

Vice Presidents, 1st, S. B. Childs, Denver; 2nd, A. L. Trout, Walsenburg; 3rd, W. W. Frank, Glenwood Springs; 4th, A. J. Nossaman, Pagosa Springs.

Secretary, Crum Epler, Pope Block, Pueblo.

Treasurer, W. A. Sedwick, Metropolitan Building, Denver.

BOARD OF COUNCILLORS.

Term Expires, 1917—Horace G. Wetherill, Denver; A. R. Pollock, Monte Vista. **1918**—J. W. Ames, Denver; E. A. Elder, Pueblo. **1919**—J. A. Matlack, Longmont; Edgar Hadley, Telluride. **1920**—Will H. Swan, Colorado Springs; H. S. Henderson, Grand Junction. **1921**—M. R. Fox, Sterling; Samuel French, Meeker.

DELEGATES TO AMERICAN MEDICAL ASS'N.

Term Expires, 1917—L. H. McKinnie, Colorado Springs; Alternate, George A. Moleen, Denver. **1918**—Oliver Lyons, Denver; Alternate, C. W. Plumb, Grand Junction.

COMMITTEES.

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American Association of Labor Legislation, George A. Boyd, Chairman, Colorado Springs; W. F. Martin, Colorado Springs; Philip Work, Pueblo.

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Medical Education, Chas. S. Elder, Chairman, Denver; C. N. Meader, Denver; Fritz Lassen, Pueblo.

To Co-operate with the State Pharmacal Association, E. W. Collins, Denver; Aubrey Williams, Denver; F. W. Kenney, Denver.

First Aid, J. W. Ames, Chairman, Denver; Henry Sewall, Denver; Cuthbert Powell.

Constituent Societies and Times of Meeting and Secretaries.

Bent County, first Tuesday of each month; P. A. Leedham, Las Animas.

Boulder County, every Thursday; C. L. La Rue, Boulder.

Crowley County, second Tuesday of each month; E. O. McCleary, Ordway.

Delta County, last Friday of each month; W. Scott Cleland, Delta.

Denver County, first and third Tuesday of each month; H. R. Stilwell, Denver.

El Paso County, second Wednesday of each month; G. B. Gilmore, Colorado City.

Fremont County, fourth Monday of January, March, May, July, September and November; R. C. Adkinson, Florence.

Garfield County, second Thursday of each month; W. W. Frank, Glenwood Springs.

Huerfano County, P. G. Mathews, Walsenburg.

Lake County, first and third Thursday of each month; J. C. Strong, Leadville.

Larimer County, first Wednesday of each month; C. C. Taylor, Fort Collins.

Las Animas County, first Friday of each month; A. J. Chisholm, Trinidad.

Mesa County, first Tuesday of each month; R. B. Harrington, Grand Junction.

Montrose County, first Thursday of each month; S. H. Bell, Montrose.

Morgan County, E. E. Evans, Fort Morgan.

Northeast Colorado; N. Eugenia Barney, Sterling.

Otero County, second Tuesday of each month; R. S. Johnson, La Junta.

Prowers County, first Tuesday of each quarter; F. Milton Friend, Lamar.

Pueblo County, first and third Tuesday of each month; J. H. Woodbridge, Pueblo.

Routt County; H. C. Dodge, Steamboat Springs. **San Juan County;** R. C. O'Halloran, Silverton.

San Luis Valley; L. L. Herriman, Alamosa. **Teller County;** Thos. A. McIntyre, Cripple Creek.

Tri-County; C. W. Merrill, Burlington.

Weld County, first Monday of each month; J. W. Lehan, Greeley.

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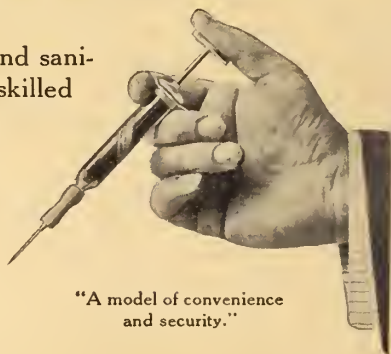
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